TRONEVA, M. Ya.

USSR/Metals · Alloys Manganese-Nickel System Sep 49

"Study of the Manganese-Nickel System," N. N. Kurnakov, M. Ya. Troneva, Inst of Gen and Inorg Chem imeni N. S. Kurnakov, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 1

Studied manganese-nickel alloys by thermal analysis (using a Kurnakov pyrometer), microstructure, electro-conductivity, and dilatometry. Curves show diagram of equilibrium of the system (by thermal analysis and dilatometry), electrical resistance and temperature coefficient of resistance, and coefficient of linear expansion. Found alloys having 50.24% nickel and 75% nickel to have minimum resistance. Submitted by Acad G. G. Urazov 6 Jul 49.

PA 2/50T93

KURNAKOV, N.N.; TRONEVA, M.Ya.

Study of the system manganese - nickel - iron. Izv.Sekt.fiz.-khim. anal. 24:132-147 '54. (MIRA 8:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR.
(Manganese-nickel-iron alloys)

KURNAKOV, N.N.; TRONEVA, M.Ya.

Study of the properties of alloys of iron with nickel and manganese with titanium additions. Izv.Sekt.fiz-khim.anal. 24:148-150 '54. (MIRA 8:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR.
(Iron-nickel-manganese-titanium alloys)

L 5363-66 EWT(m)/EWP(t)/EWP(b) LJP(c) JD
ACC NR: AP5027402 SOURCE CODE: UR/0181/65/007/011/3255/3259

AUTHOR: Prostoserdova, I. V.; Pumper, Ye. Ya.; Troneva, N. V.

ORG: All-Union Electrical Engineering Institute (Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina); State Design and Planning Scientific Research Institute of the Rare Metals Industry, Moscow (Gosudrastvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti)

TITLE: Mechanism of the anomalous diffusion of zinc in indium antimonide

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3255-3259

TOPIC TAGS: zinc, indium compound, antimonide, metal diffusion

ABSTRACT: Various models have been proposed to explain the anomalous diffusion of zinc in $A^{III}B^{V}$ compounds. Nearly all these models are based on the assumption that the zinc atoms exist in two state S_1 and S_2 with different coefficients of diffusion D_1 and D_2 and concentrations C_1 and C_2. The author conducts experiments to record both diffusion fluxes for zinc in indium antimonide. The zinc was diffused into n-InSb plates at 440°C and the specimens were then annealed for various periods.

Card 1/2

L 5363-66
ACC NR: AP5027402

The distribution of acceptor concentration was measured by the probe method, and the total number of Zn atoms was measured by the local x-ray spectral method. The experimental conditions made it possible to record two separate diffusion fluxes of zinc in indium antimonide with comparable surface concentrations and coefficients of diffusion $D_1 = 3 \cdot 10^{-10}$ cm^2·sec^{-1} and $D_2 < 10^{-3} D_1$. Probe measurements of Zn concentrations in InSb indicate that the S_2 state is substitutional. The experimental data indicate that the form of the distribution curve is determined by interaction between the two diffusion fluxes. The mechanism of this interaction may be similar to the trap mechanism (Ye. Ya. Pumper, I. V. Prostoserdova, *FTT*, 6, 899, 1964) or to the mechanism responsible for diffusion of charged and neutral zinc atoms (J. W. Allen, *J. Phys. Chem. Sol.*, 15, 134, 1960). Orig. art. has: 3 figures.

SUB CODE: SS,MM/ SUBM DATE: 09Feb65/ ORIG REF: 005/ OTH REF: 003

Card 2/2

ACCESSION NR: AP4038767 S/0048/64/028/005/0809/0810

AUTHOR: Troneva, N.V.

TITLE: Character of the fine structure in the L_{III} absorption spectra of some rare earth elements in oxides and hexaborides /Report, Seventh Conference on X-Ray Spectroscopy held in Yerevan 23 Sep to 1 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 809-810

TOPIC TAGS: x-ray spectrum, x-ray absorption, rare earth compound, fine structure, chemical bond

ABSTRACT: The L_{III} absorption spectra of Gd_2O_3, GdB_6, Sm_2O_3 and PrB_6 were recorded photographically out of 200 eV from the absorption edge by reflection from the $(10\bar{1}0)$ planes of a bent (R = 35 cm) quartz crystal. The Gd spectra were also recorded to about 80 eV from the edge by reflection from the $(13\bar{4}0)$ planes. The Gd L_{III} white line in GdB_6 was displaced from its position in Gd_2O_3 by 1.3 eV toward the longer wavelengths, and the hexaboride line was somewhat narrower than the oxide line. The fine structure was somewhat different in the two compounds. The spectra are compared with other rare earth oxide and hexaboride spectra, some obtained ear-

Card 1/2

ACCESSION NR: AP4038767

lier in the same laboratory and some quoted from other sources (Y.Cauchois and H. Hulubei,C.R.Acad.Sci.,Paris,201,600,1935; Sakellaridius, C.R.Paris,236,1244,1953). The L_{III} white lines of Cd, Gd and Yb are narrower in the hexaborides than in the oxides, and itis tentatively concluded that the 4f electrons occupy free 5d states in the hexaborides and higher energy states in the oxides. The positions of the fine structure peaks depend strongly on atomic number in the oxides and are almost independent of atomic number in hexaborides. This is regarded as confirmation of the predominance of the metallic bond in the hexaborides. Orig.art.has: 1 figure and 1 table.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 12Jun64 ENCL: 00

SUB CODE: OP NR REF SOV: 006 OTHER: 005

Card 2/2

PRONEVA, N.V.

Nature of the fine structure of $L_{I,II}$ absorption spectra of certain rare-earth elements in oxides and hexaborides.
Izv. AN SSSR.Ser. fiz. 28 no. 5:809-810 My '64. (MIRA 17:6)

TRONEVA, N.V.

X-ray L_{III} absorption spectra of tin, barium, lanthanum, ytterbium, and rhenium in certain compounds. Izv.AN SSSR.Ser.fiz. 27 no.3:403-408 Mr '63. (MIRA 16:2)

1. Gosudarstvennyy nauchno-issledovatel'skiy proyektnyy institut redkometallicheskoy promyshlennosti, Moskva.
(X-ray spectroscopy)

BOROVSKIY, I.B.; TRONEVA, N.V.; RONAMI, G.N.

Investigating L_{iii} X-ray spectra of tin absorption in α-Sn, β-Sn, and Mg_2Sn. Trudy Inst. met. no.15:88-95 '63. (MIRA 16:9)
(Tin--Absorption spectra) (X-ray spectroscopy)

S/048/63/027/003/018/025
B106/B238

AUTHOR: Troneva, N. V.

TITLE: L_{III} X-ray absorption spectra of tin, barium, lanthanum ytterbium and rhenium in a few compounds

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 403-408

TEXT: The X-ray absorption spectra of Sn, Ba, La, Yb and Re were studied in the following substances: α-Sn, β-Sn, SnO_2, BaB_6, BaO, LaB_6, La_2O_3, YbB_6, Yb_2O_3, Re, NH_4HReCl_4, $RePy_2Cl_4$, $(NH_4)_2ReCl_6$ and NH_4ReO_4. Results: Tin: more fine structure extremes were observed than are given in the book Rentgenovskiye luchi (X-rays), translated with M. A. Blokhin as editor, M., 1960. A double absorption edge was also observed for β-Sn. As the character of the chemical bond changes from metallic (β-Sn) to covalent (α-Sn) to ionic (SnO_2), the L_{III} edge shifts 0.5 to 1 ev towards the short-wave side, and the shape of the principle edge changes to form sharp

absorption lines. Barium: The white absorption line of Ba is broader in BaB_6 than in BaO; to within the limits of error, it occupies the same position for both compounds, which suggests that the valency of the barium is also the same in both cases. Lanthanum: a weak absorption maximum occurs near the white line on the short-wave side; this is absent in Ba and Cs, and in La_2O_3 it is shifted 2.5 ev towards the short-wave side as compared with LaB_6. The white line is broader in LaB_6 than in La_2O_3 and, as in barium, not shifted. Ytterbium: the white line of the L_{III} spectrum in Yb_2O_3 is shifted 8 ev towards the short-wave side as compared with YbB_6. It can be deduced from this that the valency of Yb in YbB_6 is considerably smaller than three. Comparing the L_{α_1} and L_{β_2} lines in the fourth order of the reflection from $\{10\bar{1}0\}$ for Yb_2O_3 and YbB_6 yields the following increases in transition energy in Yb_2O_3 as compared with YbB_6: $L_{III} \rightarrow Y$, 8 ev; $M_V \rightarrow Z$, 8.5 ev; $N_V \rightarrow Z$, 7 ev. Rhenium: as in Yb, a very

L_{III} X-ray absorption spectra of tin, ...

distinct white line appears on the long-wave side of the L_{III} spectrum, corresponding to a 2p → 5d dipole transition. The shift of the white line as the formula valency changes agrees with data in the literature (Collet V., These, Paris, 1959). Although $(NH_4)_2ReCl_6$ and $RePy_2Cl_4$ have the same formula valency, the shifts of the white lines are different. The compounds probably differ in the character of the nearest neighbourhood of their rhenium atom. The radii of the first spherical coordination shells were calculated from the experimental data by means of approximation formulas due to A. I. Kozlenkov (Izv. AN SSSR. Ser. fiz., 25, 957 (1961)). The results for the hexachlorides of Ba, La and Yb agree well with crystallographic data. It is therefore probable that the short-wave structure of the L_{III} spectra for these compounds depends on the 2p electron knocked out during absorption scattering the wave in the first coordination shell made up of boron atoms. The radii determined approximately for β-Sn, Re, Nh_4HReCl_4 and $RePy_2Cl_4$ also agree with data in the literature (Bokiy G. V., Vvedeniye v kristallokhimiyu (Introduction to Crystal Chemistry), Izd. MGU, 1954). There are 5 figures and

S/048/63/027/003/018/025
L_{III} X-ray absorption spectra of tin, ... B106/B238

1 table.

ASSOCIATION: Giredmet

Card 4/4

KURNAKOV, N.N.; TRONEVA, M.Ya.

Equilibrium diagram of the binary system titanium - carbon containing up to 5% of carbon. Zhur.neorg.khim. 6 no.6:1347-1350 Je '61. (MIRA 14:11)

(Titanium carbide)

KURNAKOV, N.N.; TRONEVA, M.Ya.

Rate of formation of $MnNi_3$ in manganese-nickel alloys. Trudy Inst. met. no.8:128-134 '61. (MIRA 14:10)
(Manganese-nickel alloys--Metallography)
(Phase rule and equilibrium)

18.1285
1.1600

31856
S/078/62/007/001/004/005
B119/B110

AUTHORS: Kurnaskov, N. N., Troneva, M. Ya.

TITLE: Examination of the system titanium - chromium - carbon containing up to 20% chromium and 1% carbon

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 1, 1962, 157-164

TEXT: The alloys studied were produced from titanium, chromic hydride, and graphite powders by the metal - ceramic method. The compressed powder was sintered in a silite furnace at 1100°C for 100 hr in a high vacuum, and then fused in sealed quartz vessels in a TBB-2M (TVV-2M) furnace or a high-frequency induction furnace. Next, they were thermally treated as follows: homogenization at 1100°C for 48 hr, stepwise tempering at 1000, 800, and 700°C for 60 hr, and 600°C for 200 hr. The samples heated to 1100 and 800°C in the above vessels were quenched in ice water. The alloys were then submitted to differential thermal analysis (with a pyrometer according to Kurnakov). Hardness, microhardness, and microstructure were determined. To identify the carbide phase, the alloys were dissolved in a mixture of 15 cm^3 of HCl, 3 g of NaF, and 285 cm^3 of H_2O.

Card 1/A2

Examination of the system ...

Insoluble carbides were studied with X-rays. Results: Thermoanalytical data show that the presence of C in the alloy causes a rise in temperature of the eutectoid conversion. With alloys containing 0.5% C and 0-18% of Cr, the temperature is 730-760°C; without C, it is 728°C. The microhardnesses of the individual alloy phases are: α-phase: ~600 kg/mm^2; β-phase: 400-500 kg/mm^2; $TiCr_2$ phase: 950-1100 kg/mm^2; TiC phase: 1400-1850 kg/mm^2. The hardnesses of the examined alloys vary between 413 and 681 kg/mm^2. The carbide phase of all alloys could be identified as being TiC. Results of microstructural analyses are given in the figures below. Among others, papers were mentioned by V. N. Yeremenko (Ref. 5: Tr. In-ta chernoy metallurgii AN USSR, 8, 40 (1954)), I. I. Kornilov, V. S. Mikheyev, T. S. Chernova (Ref. 6: Tr. In-ta metallurgii im. A. A. Baykova AN SSSR, vyp. II, 126 (1957)), V. P. Yelyutin, P. P. Arsent'yev, Yu. Ya. Pavlov (Ref. 15: Zavodsk. laboratoriya, 20, no. 5, 546 (1954)). There are 13 figures, 5 tables, and 16 references: 6 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: M. K. McQuillan, J. Inst. Metals., 82, 433 (1954); P. Duwez, J. Taylor, Trans. Amer. Soc. Metals., 44, 495 (1952); J. Cadoff, J. P. Nielsen. J. Metals., 5, 248 (1953); L. Evenhard. Titanium

Card 2/12

15.2220 1273, 1043, 1145

S/078/61/006/006/004/013
B110/B206

AUTHORS: Kurnakov, N. N., Troneva, M. Ya.

TITLE: Equilibrium diagram of the binary system titanium - carbon up to 5% carbon

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 6, 1961, 1347-1350

TEXT: The solubility of carbon in α-titanium is restricted. The peritectic reaction between α-Ti and β-Ti takes place at a C content of about 0.4 to 0.5% and a temperature of about 910°C. Titanium carbide forms at a higher C content during peritectic temperatures. The C content of the α-phase reaches the maximum at peritectic temperatures and amounts at 500°C to about 0.1% C. Since the phase diagram titanium-carbon has not been investigated yet due to difficult experimental conditions, the authors have made it the object of their study. Two series of alloys were prepared for this purpose. The first series was melted in argon atmosphere from pressed, metallic Ti (99.0% Ti) in graphite crucibles in special quartz test tubes; the second series was prepared by means of metal-ceramic methods from a powder of industrial titanium that had been obtained by the

magnesium thermal method. Acheson graphite powder served as carbon. The titanium carbon mixtures were first pulverized in agate mortar, then pressed, sintered in a silite vacuum oven and melted in the TBB-2M (TVV-2M) furnace. The thermal treatment took place in evacuated quartz test tubes: homogenizing for 24 hr at 1100°C (I) and hardening for 200 hr at 600°C. The other samples were kept in sealed evacuated quartz ampuls for 100 hr at 700 (II), 800 (III), 850 (IV), 880 (V), 900 (VI), 950 (VII) and 1000, and 1100°C (VIII), and then quenched in ice water. The polished sections were etched with a mixture from hydrofluoric acid and an etching liquid made from 20% H_2F_2, 20% HNO_3, and 60% glycerin. The following was ascertained: (I) with 0.094% C had a monophase structure of the solid α-solution and contained no carbides. (I) with 0.16% C: α-phase and traces of carbides. (I) with 0.2% C: α-phase and few carbides; with 0.5% C: α-phase, carbides of medium size; with 0.8% C: α-phase + many carbides of average size; with 5%: many carbides of great and medium size. (II) with 0.094% and 0.16% C: monophase α-structure and no carbides; with 0.2% C: α-phase and very few small carbides; with 0.5% : α-phase and many carbides of large and medium size. (III) with 0.2% C: monophase coarse

Equilibrium diagram of the binary ...

α -grains, no carbides; with 0.27% C: α -granules plus traces of carbide; with 0.33% C: α -phase and small carbides; with 0.42% C, 0.5% C, and 0.8% C: α -phase and small and medium carbides; with 5.2% C: α -phase and large carbides. (IV) with 0.094% C, 0.2% C, and 0.26% C: α -phase and no carbides; with 0.33%: α -phase and carbide traces; with 0.41 and 0.49%: α -phase + carbides; with 0.8% C: α -phase and carbides of medium size. (V) with 0.2% C, 0.32%C, and 0.41% C: monophase α -structure; with 0.5% and 0.8%: diphase α -structure and carbides. (VI) with 0.094%, 0.2%, 0.26%, 0.36%, and 0.42% C: diphase structure $\alpha + \beta$; with 0.5%, 0.6%, 0.8% and 5.2% C: α -phase and carbides. (VII) with 0.1% and 0.16% C: α' -phase (needle-shaped structure of the converted β -phase) + individual α-granules; with 0.2%, 0.25%, 0.36%, and 0.41% C: α' -phase + individual α -granules and carbides. During quenching, the β -phase did not remain intact and only its outlines were visible. (VIII) with 0.2% C, 0.18%, 0.32%, 0.46%, 0.8% C: β -phase + carbides; with 5.2%: β -phase and separation of large carbides. The thermal analysis was conducted with alloys of a C content of 0.094 to 0.8% in quartz test tubes under argon atmosphere by means of differential Pt-PtRh thermocouples and the recording pyrometer by N. S. Kurnakov. 910°C was thereby determined as conversion temperature.

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S/078/61/006/006/004/013
B110/B206

Equilibrium diagram of the binary ...

The fusing temperatures (Table) determined by means of pyrometer and graphite-tungsten thermocouples (Ref. 17: A. Shchukin, L. V. Pegushina, Zavodsk. laboratoriya, No. 5, 632 (1943)) are given in the table. Fig. 4 shows the phase diagram of the system titanium - carbon determined by thermal analysis and microstructural analysis. There are 4 figures, 1 table, and 17 references: 9 Soviet-bloc and 8 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 16: J. Cadoff, P. Nielsen. Trans. Amer. Inst. Min. Met. Engs., 197, 248 (1953).

SUBMITTED: May 9, 1960

Card 4/6

88593

S/078/60/005/011/002/025
B015/B060

18 1235

AUTHOR: Kurnakov, N. N., Troneva, M. Ya.

TITLE: Study of the Ternary System Chromium - Niobium - Molybdenum in the Region Chromium and Niobium Corners

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 11, pp. 2403-2409

TEXT: There are literature data available on the binary systems Cr-Nb, Mo-Nb, and Cr-Mo (V. P. Yelyutin and V. F. Funke, V. N. Yeremenko et al., I. I. Kornilov, R. S. Polyakova, and others), but not on the ternary system. For this reason the authors conducted investigations to determine the constitution diagram of the Cr-Nb-Mo system. Melting point, microstructure, macro- and microhardness, and, in part, also X-ray structural analyses were determined for the purpose. The melting point of the alloy was determined on powder-metallic specimens which were heated up to 1400-1800°C in a ТВВ-2М (TVV-2M) furnace. The specimens intended to serve for the determination of microstructure, macro- and microhardness

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88593

Study of the Ternary System Chromium - Niobium - Molybdenum in the Region Chromium and Niobium Corners

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B015/B060

were melted in a light arc, and were then homogenized in the furnace at about 1500°C for 25 h. The melting point determinations made with the aid of the Meyerson furnace and the optical ОП-48 (OP-48) pyrometer showed (Table 1) that there are regions with lowest melting temperatures which approach the side of the binary system Cr-Nb and correspond to the eutectics in the binary system (Fig. 1). Examinations of the microstructure of the alloys (Table 2, some compositions) showed (Fig. 3, microstructures) that in the chromium and molybdenum corner of the diagram there is a ternary solid solution α consisting of chromium, niobium, and molybdenum, whose region expands slowly with an increase in the molybdenum content. At the chromium-niobium side there is a larger two-phase region consisting of the Cr_2Nb compound and a solid α-solution. The boundary of the two-phase region Cr_2Nb + solid α-solution for 1500° and 1000°C was determined on the basis of microstructural examinations. The X-ray structure examinations made by M. S. Model' and V. S. Shekhtman confirmed the presence of the α-solution and Cr_2Nb. Microhardness determinations showed the existence of two differently hard phases, one on the basis of

Card 2/3

88593

Study of the Ternary System Chromium - Niobium - Molybdenum in the Region Chromium and Niobium Corners

S/078/60/005/011/002/025
B015/B060

Cr_2Nb with hardnesses of 1200 to 1850 kg/mm^2, and the second in the region of the α-solution with hardnesses of only 250-700 kg/mm^2. Hardness measurements made on the Vickers instrument also showed that hardness in the two-phase region is considerably higher than in the ternary region of the α-solution. Reference is made to a similarity of the Cr-Nb-Mo constitution diagram with that established by V. N. Sveshnikov et al. (Ref. 14) for Cr-Nb-V. There are 6 figures, 2 tables, and 14 references: 8 Soviet, 5 US, and 1 German.

SUBMITTED: March 4, 1960

Card 3/3

S/020/62/146/001/012/016
B101/B144

AUTHOR: Troneva, N. V.

TITLE: L_{III} X-ray absorption spectra and the character of the bond in the complex compounds of Re^{II}, Re^{IV}, Re^{VII}

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 1, 1962, 118-121

TEXT: The L_{III} absorption spectra of metallic Re and of NH_4HReCl_4, $RePy_2Cl_4$, $(NH_4)_2ReCl_6$, and NH_4ReO_4 were studied in order to estimate the effective charge of Re near the 5d shell and the radius of the first coordination sphere. An X-ray spectrograph with bent quartz crystal $(10\bar{1}0)$ was used, dispersion 8.25 XE/mm, resolving power 10,000. The spectra (Fig. 1) showed a shift of the white line (i = 2) with variation of the Re valency, but the shift was +3 ev for $(NH_4)_2ReCl_6$ and +1 ev for $RePy_2Cl_4$ despite the presence of Re^{IV} in both compounds. This is explained by different effective charges of Re near the 4d shell, for which the

L_{III} X-ray absorption spectra...

following data are given: Re_{met} 0; NH_4HReCl_4 and $RePy_2Cl_4$ charge +0.5; $(NH_4)_2ReCl_6$ charge +1.5; NH_4ReO_4 charge +1.0. The lower charge of the Re central atom in NH_4ReO_4, as compared with $(NH_4)_2ReCl_6$, suggests a d^3s instead of an sp^3 hybridization for the former. The similarity of the fine structure for $(NH_4)_2ReCl_6$ and $RePy_2Cl_4$ indicates that octahedral coordination exists for $RePy_2Cl_4$ also. The approximate equation developed by A. I. Kozlenkov on the basis of the short-range order theory (Izv. AN SSSR, ser. fiz., 25, 957 (1961)) was checked as regards its applicability for calculating the radius r_1 of the first coordination sphere. The results, r_1 = 2.7 Å for Re_{met}, r_1 = 2.2 Å for NH_4HReCl_4 and $RePy_2Cl_4$, confirmed the applicability of the short-range order theory. Both compounds have covalent Re bonds and the former also has Re-Re bonds. For $(NH_4)_2ReCl_6$ and NH_4ReO_4 it was impossible to calculate r_1 owing to the presence of a periodic field of the ionic environment. There are 1 figure and 1 table.

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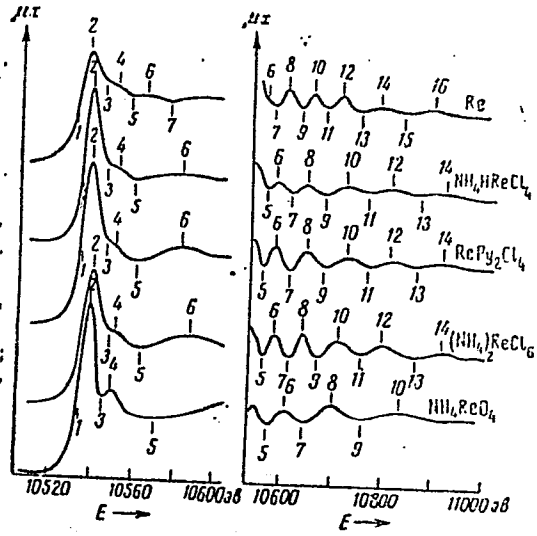
L_{III} X-ray absorption spectra... S/020/62/146/001/012/015
B101/B144

PRESENTED: April 13, 1962, by I. I. Chernyayev, Academician

SUBMITTED: April 10, 1962

Fig. 1. L_{III} X-ray absorption spectra of Re.

Fig. 1



Card 3/3

TRONEVA, N.V.

X-ray L_{III}-absorption spectra and the character of the bond in complex compounds of Re^{II}, Re^{IV}, Re^{VII}. Dokl. AN SSSR 146 no.1:118-121 S '62. (MIRA 15:9)

1. Predstavleno akademikom I.I. Chernyayevym.
(Rhenium compounds--Spectra) (Chemical bonds)

TRONEVA, N. V.

"An Investigation of the X-Ray Spectra in an M-Series Emission of Europium, Gadolinium, Terbium, Dysprosium, Holmium, and Erbium." Cand Phys-Math Sci, Moscow Order of Lenin State U imeni M. V. Lomonosov, 17 Nov 54. (VM, 9 Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

SOV/126-6-1-19/33

AUTHORS: Troneva, N. V., Marchukova, I. D. and Borovskiy, I. B.

TITLE: The L-series X-ray Lines of Ce in CeB_6 and CeO_2 (Rentgenovskiye L-spektry tseriya v CeB_6 and CeO_2)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 1, pp 141-147 (USSR)

ABSTRACT: The spectra are studied in emission and absorption, using a photographic vacuum spectrograph (not described) at a dispersion of 14.5 kX/mm. The preparation and structure of the materials is discussed in some detail, the electron band structure in these crystals being the ultimate point of interest in the work. Figs.1-3 show microphotometer traces for some of the lines, or drawings deriving therefrom. (1 and 2 in emission, 3 in absorption, using the continuum from a W anode). Table 1 is concerned with the electron band structures in the compounds, Tables 2-4 with the experimental results. It is concluded that the bonding and valence state have a substantial influence on the L-levels, particularly the upper ones. Ionic bonding broadens the line absorptions (5d and 6s states) and causes a shift in level, relative to metallic bonding. The shift related to the 4f state

Card 1/2

The L-series X-ray Lines of Ce in CeB_6 and CeO_2 SOV/126-6-1-19/33

in CeB_6 indicates an apparent valency of less than 4, in agreement with the data of Ref.(19). It is also concluded that the 5d and 6s states play a considerable part in the bonding, unlike the 4f, as earlier magnetic data indicate.
There are 3 figures, 4 tables and 26 references, 10 of which are Soviet, 7 English, 8 French, 1 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 12, 1956

Card 2/2

1. Cerium boride crystals--X-ray analysis 2. Cerium boride crystals--Spectra 3. Cerium oxide crystals--X-ray analysis 4. Cerium oxide crystals--Spectra

TRONEVA, N. V., MARCHUKOVA, I. D., and BOROVKSKIY, I. B.

TRONEVA, N.V.

"Investigation of X-ray L-Spectra of Some Rare-earth Element Compounds"

Materials of the 2nd All-Union Conference on X-ray Spectroscopy; Moscow, January 31 February 4, 1957 (Materialy II Vsesoyuznogo soveshchaniya po rentgenovskoy spektroskopii; Moskva, 31 yanvarya - 4 fevralya 1957 g.)

Izvestiya Akademii nauk SSSR, Seriya fizicheskaya 1957, Vol 2. Nr 10, pp 1341 - 1342 (USSR)

FIZFAK MGU

YUDIN, Yu.; TRONFIMOVA, A.

What we get from scientific technological societies. NTO 3 no.6:45 Je '61. (MIRA 14:6)

1. Chleny nauchno-tekhnicheskogo obshchestva tresta "Transsignalsvyaz'zavody" Ministerstva putey soobshcheniya, g. Moskva.
(Technical societies)

FETTER, V.; TITLBACHOVA, S.; TRONICEK, CH.

Anthopological survey of the adult population at the first all-state Spartakiade. Cas. lek. cesk. 95 no.27:717-721 6 July 56.

1. Anthropologicky ustav Karlovy University.
(ANTHROPOMETRY,
of adults in Czech. (Cz))

CZECHOSLOVAKIA / General and Specialized Zoology. Insects. Biology and Ecology. P

Abs Jour : Ref Zhur - Biol., No 18, 1958, No. 82915

Author : Tronicek, E.
Inst : Not given
Title : Duration of the Egg Stages in the Breeding of Butterflies in Closed and Open Places

Orig Pub : Zool. listy, 1957, 6, No 2, 163-168

Abstract : Observations showed that the differences of extreme (minimal and maximal) temperatures in nature equals approximately a twofold difference of the same temperatures in closed places. The different duration of the egg stages in the very same conditions is explained by the presence of a different amount of food yolk in the eggs of the individual species. -- From the author's resume

Card 1/1

TRONICEK, E.

SCIENCE

Periodicals: Ceskoslovenska spolecnost entomologicka CASOPIS. ACTA SOCIETATIS ENTOMOLOGICAE CECHOSLOVENIAE. Vol. 52, 1955

TRONICEK, E. Lepidoptera of the central Bohemian field biotope. p. 189.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 5, May 1959, Unclass.

TRCHLOEK, E.

"A Contribution To The Knowledge Of The Lepidopterological Fauna Of Crete (Lep.). In English. " p. 1. (Sborník. Acta Entomologica. Vol. 26, No. 39[illegible], 1948-50, Praha.)

SO: Monthly List of East European Accessions, Library of Congress, Vol. 3, No. 3. March 1954, Uncl.

TRONICKOVA, Eva, CSc.

Conference on the biology and storage of seeds in Poland.
Vest ust zemedel 11 no. 5:193-195 '64.

1. Central Research Institute of Plant Production,
Praha Ruzyne.

TRONICKOVA, E.

A talk with practical experts on the nutritive and technological values of our vegetables.

p. 195
Vol. 3, no. 4, 1956
BESEDA VENKOVSKE RODINY
Praha

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 5, no. 12
December 1956

TRONICKOVA, Eva, CSc.

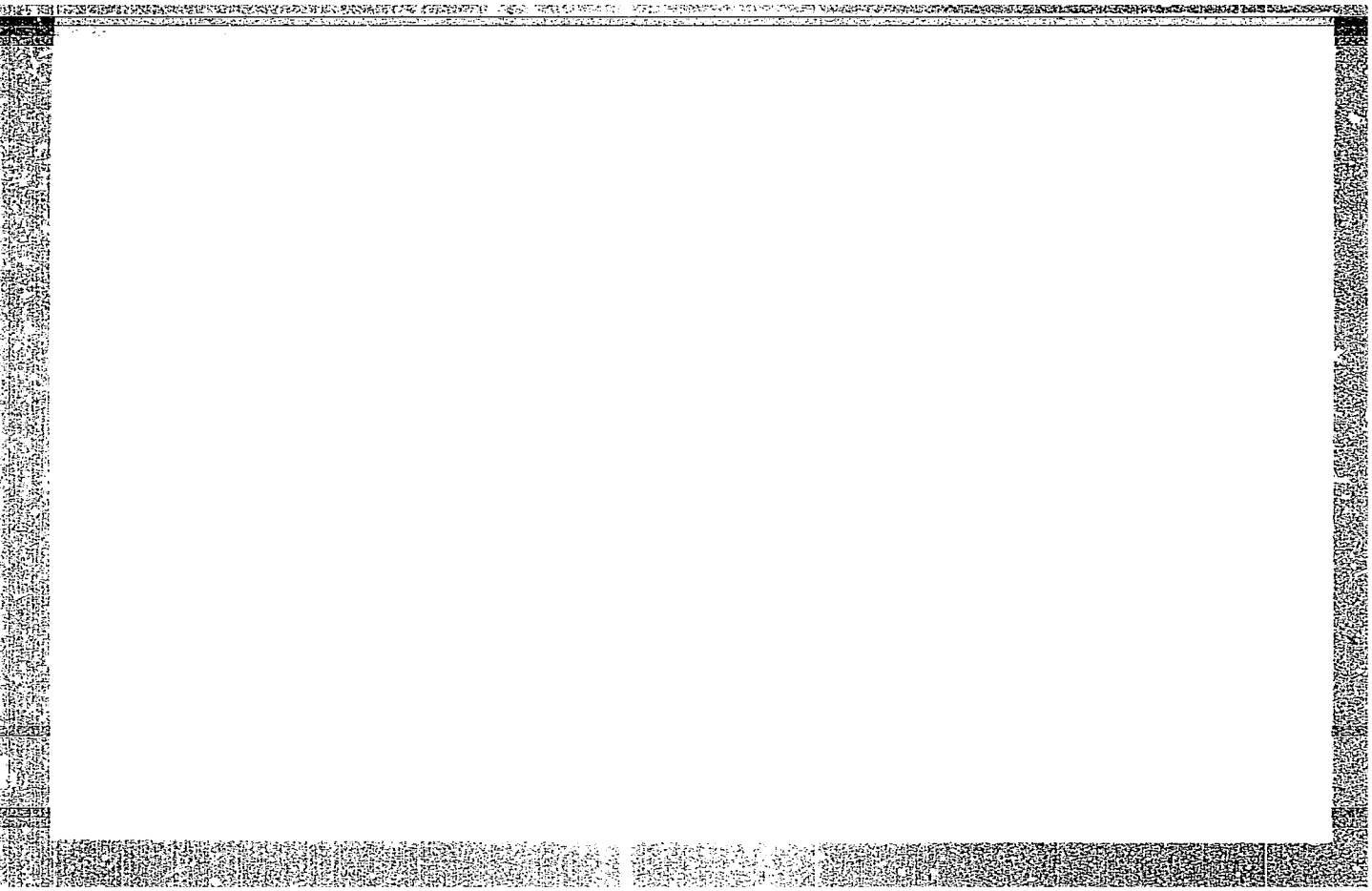
Influence of storage in temperatures below the freezing point on the vitality of kohlrabi and cauliflower seeds. Rost vyroba 11 no.1:25-34 Ja '65.

1. Department of Genetics and Breeding of the Central Research Institute of Plant Production, Prague-Ruzyne 507. Submitted June 17, 1964.

TRONICKOVA, Eva, C.Sc.

Effect of the storage in sub-zero temperature on the viability of onion seeds . (Allium cepa L.). Rost vyroba 8 no.11/12:1443-1452 D '62.

1. Ustredni vyzkumny ustav rostlinne vyroby, oddeleni slechteni a genetiky, Ruzyne.



APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001756720013-9"

TRONIN, A.A.

TRONIN, A.A.

Experience in introducing business accounting in machine-tractor stations. Vest. LGU 12 no.23:162-165 '57. (MIRA 11:1)
(Machine-tractor stations--Accounting)

TRONIN, A.A.

LEGANTSEVA, V.I., nauchnyy sotrudnik.; TRONIN, A.A., kandidat veterinarnykh nauk[deceased].; SILIN, S.I.

Prevention of pulmonary diseases in sheep. Veterinariia 33 no.10: 71-73 O '56. (MLRA 9:10)

1. Vologodskaya nauchno-issledovatel'skaya veterinarnaya opytnaya stantsiya (for Legantseva)
2. Starshiy veterinarnyy vrach Vologodskoy Mashinno-traktornoy stantsii (for Tronin).
3. Glavnyy zootekhnik Vologodskoy Mashinno-traktornoy stantsii (for Silin).

(Sheep--Diseases) (Lungs--Diseases)

TRONIN, A. A.

"Experiment in the Elimination of Brucellosis From the Farms of Vologodskaya Oblast by a Combination of Inoculations and Veterinary-Sanitary Measures." Cand Vet Sci, Moscow Veterinary Academy, Vologda, 1954. (RZhBiol, No 4, Feb 55)

SO: Sum. No. 631, 26 Aug 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

TRONIN, L. A., Eng.

Electric Insulators and Insulation

Reinforcing insulators, Prom. energ. 10, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

TRONIN, V., inzh.

Improve the transportation service for chemical enterprises. Rech.transp. 23 no.9:11-13 S '64. (MIRA 19:1)

1. Gor'kovskiy institut inzhenerov vodnogo transporta.

ACCESSION NR: AT3011856 S/2978/63/000/000/0138/0148

AUTHOR: Tronina, V. P. (Candidate of technical sciences)

TITLE: Auto-oscillations in a control system with one nonlinear component

SOURCE: Voprosy* analiticheskoy i prikladnoy mekhaniki; sbornik statey. Moscow, 1963, 138-148

TOPIC TAGS: auto-oscillations, control system, nonlinear component, stability, dead zone, transfer function

ABSTRACT: In the majority of practical cases, systems of automatic control have a nonlinear element whose static characteristic is a dead zone. The fastest method of computing for systems with one nonlinear element is the method of harmonic balance. For a nonlinear element with a unique characteristic, this method shows that a linear system with frequency characteristic of second order, obtained by excluding the nonlinear element, does not have auto-oscillations in the region of stability. However, in real systems with such a characteristic nonlinear element, auto-oscillations sometimes arise within the region of stability of the equivalent linear system. The author proposes a method for determining the condition under which auto-oscillations arise by the method of harmonic balance. This method agrees well with

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ACCESSION NR: AT3011856

experimental results. She considers a nonlinear component whose static characteristic had a dead zone and an approximate differential equation of motion of first order. The structural scheme of such a component with separation of the linear and nonlinear parts is shown in Fig. 1 (see Enclosure). The nonlinear part is assumed to be before the linear one. Let x_1 be the input coordinate of the component, x_2 be the output coordinate of the nonlinear part of the component, and x_3 the output coordinate of the component. Then the nonlinear equation of motion of the component can be written in the form

$$x_2=\Phi(x_1); \quad (1)$$

$$T\frac{dx_3}{dt}+x_3=k_2\Phi(x_1), \quad (2)$$

where Φ is a nonlinear function and T and k_2 are constant coefficients characterizing the dynamic and static properties of the component. The nonlinear function representing the zone of instability can be approximated with the help of the piecewise-linear function

$$\Phi=\begin{cases}=(x_1-a)\operatorname{tg}\beta & \text{for } x_1>a;\\ =0 & \text{for } |x_1|<a;\\ =(x_1-a)\operatorname{tg}\beta & \text{for } x_1<-a,\end{cases} \quad (3)$$

where β is the angle of the slope of the characteristic and a is the size of the zone of instability. A nonlinear component with a unique characteristic of the type

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ACCESSION NR: AT3011856

of zone of instability and transfer function of the form (see Fig. 2 on Enclosure)

$$W(p)=\frac{1}{Tp+1} \qquad (4)$$

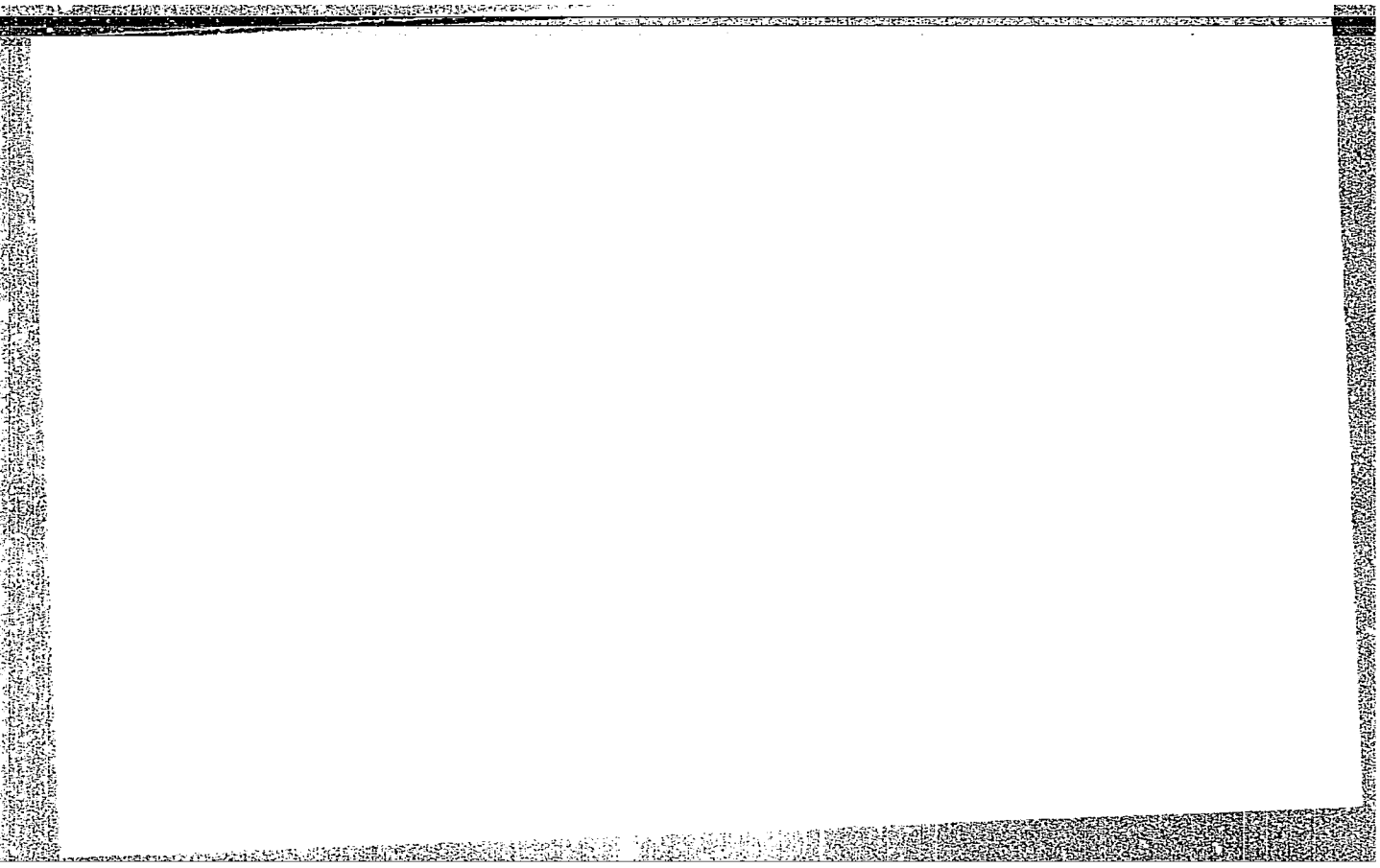
on the frequency of auto-oscillations has a non-unique characteristic whose parameters depend on the relation of the frequency of the auto-oscillations and the joining frequency of the transfer function of the component. The coefficient of amplification of the system on the boundary of the auto-oscillations is smaller than the coefficient of amplification of the equivalent linear system on the boundary of stability. The dynamic zone of instability is essentially wider than the static zone and increases as the frequency of auto-oscillations increases. As the frequency of auto-oscillations increases, the coefficient of return of the nonlinear element grows in the negative direction with limit at m = 1. Orig. art. has: 13 figures and 20 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 15May63 ENCL: 01

SUB CODE: MM NO REF SOV: 000 OTHER: 000

Card 3/4



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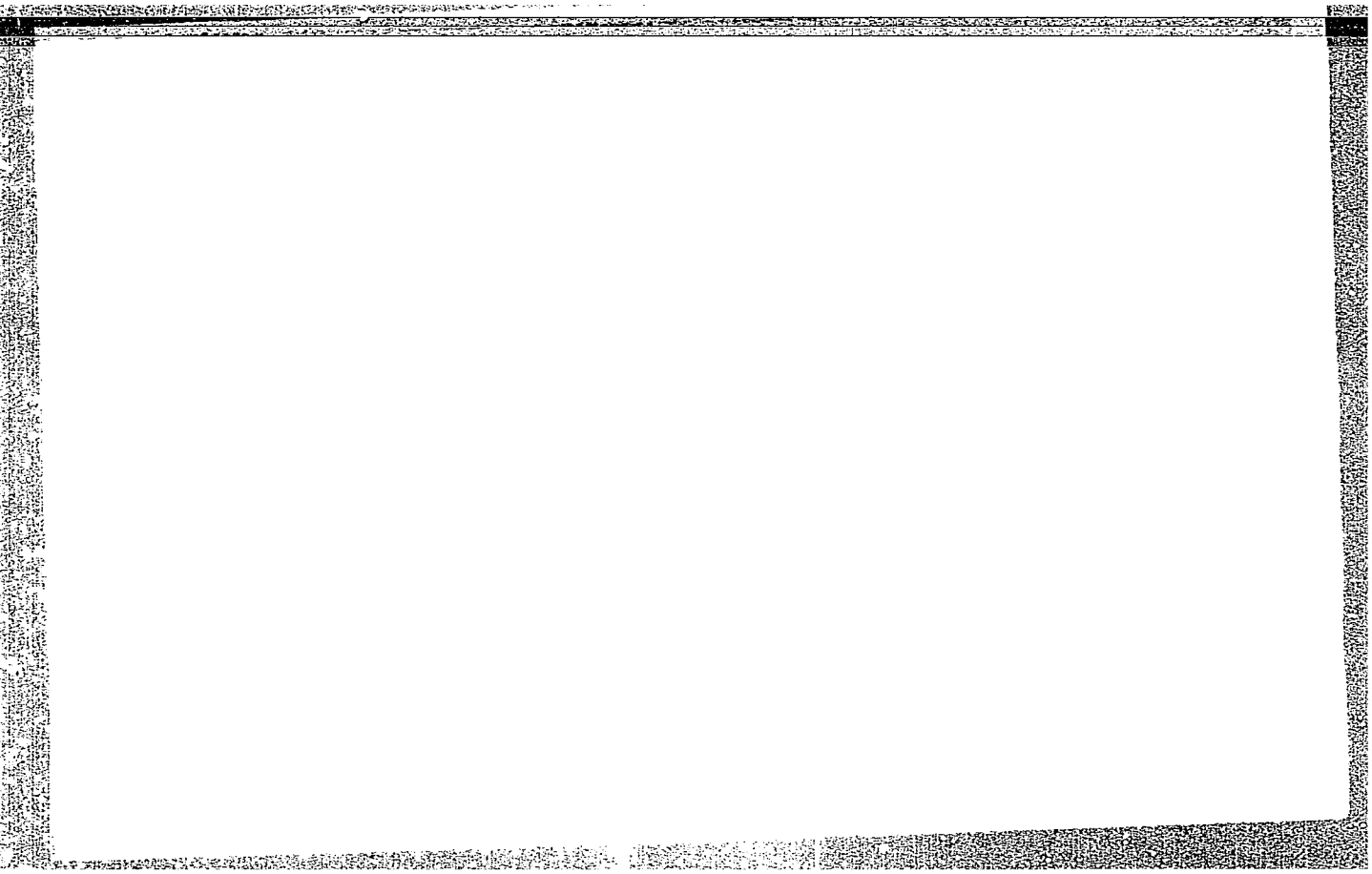
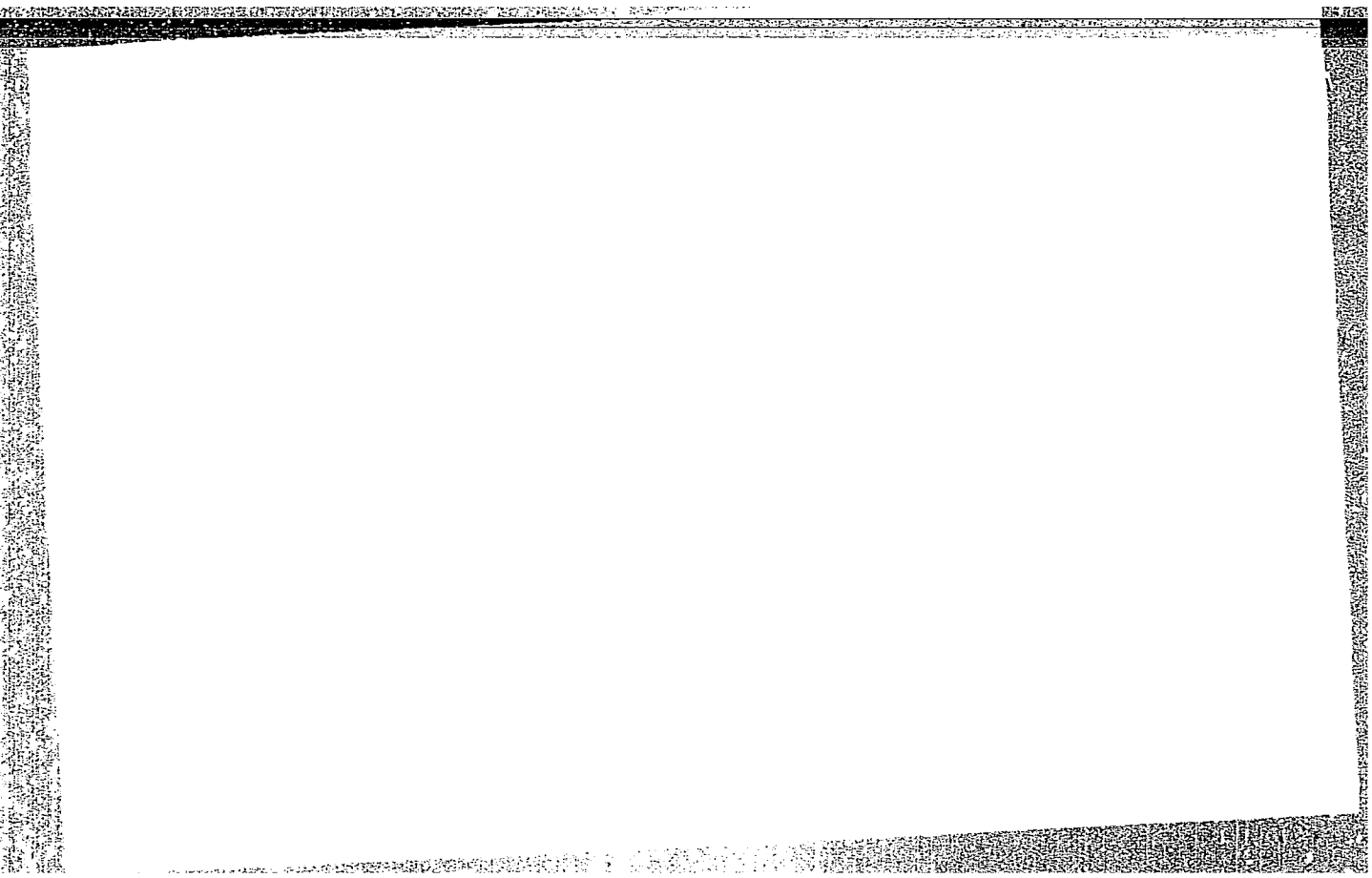




APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001756720013-9"

NAZAREV, A.N.; TRONINA, Ye.M.

Determination of small amounts of vanadium by catalytic action of its conpounds. Zav.lab. 31 no.3:270-272 '65. (MIRA 18:12)

1. Shelinogradskiy sel'skokhozyaystvennyy institut.

TRONIN, Ye.N., inzh.

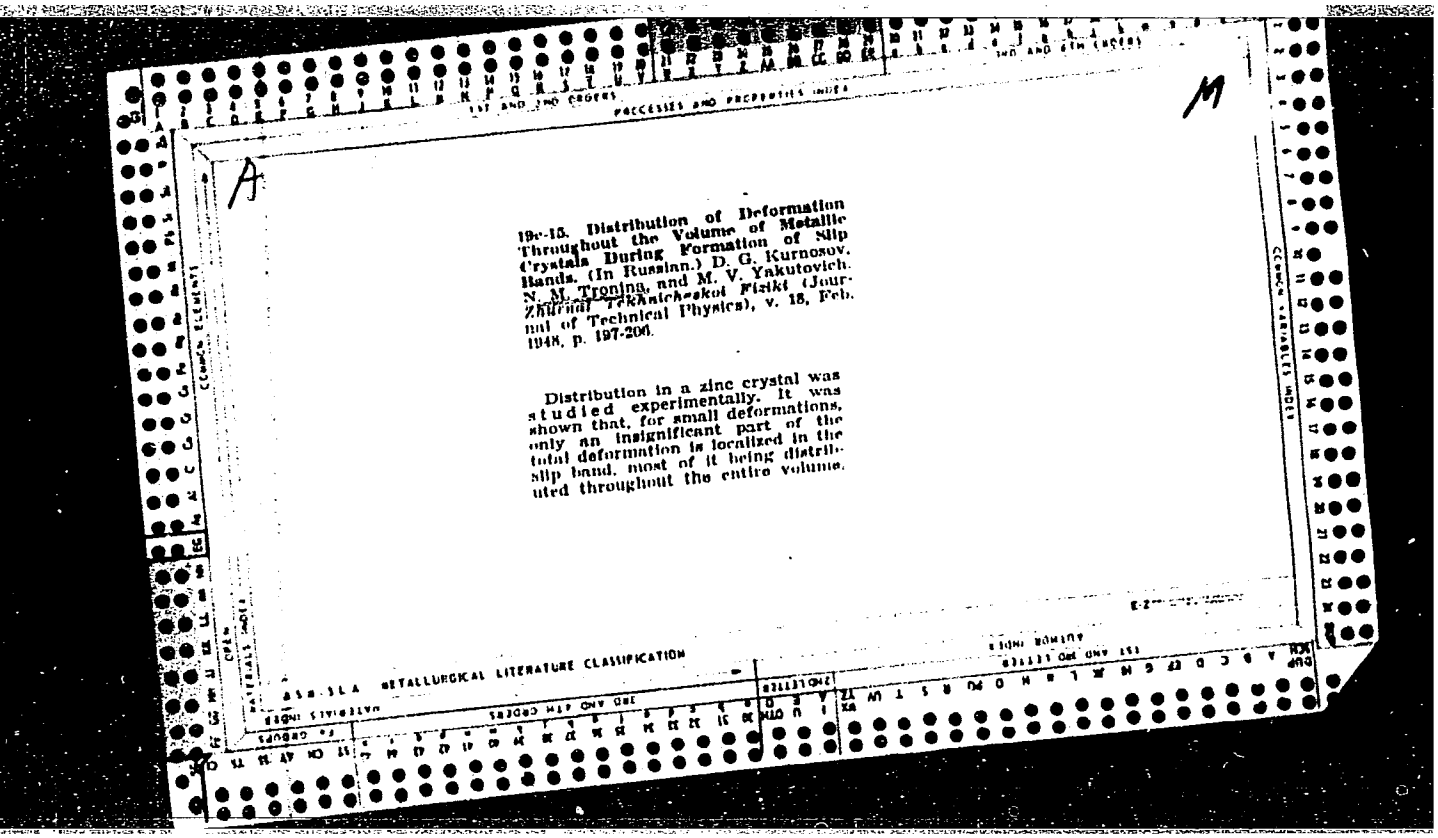
Reducing dynamic errors in face milling. Vest.mashinostr. 44 no.7: 68-71 Jl '64. (MIRA 17:9)

CA

9

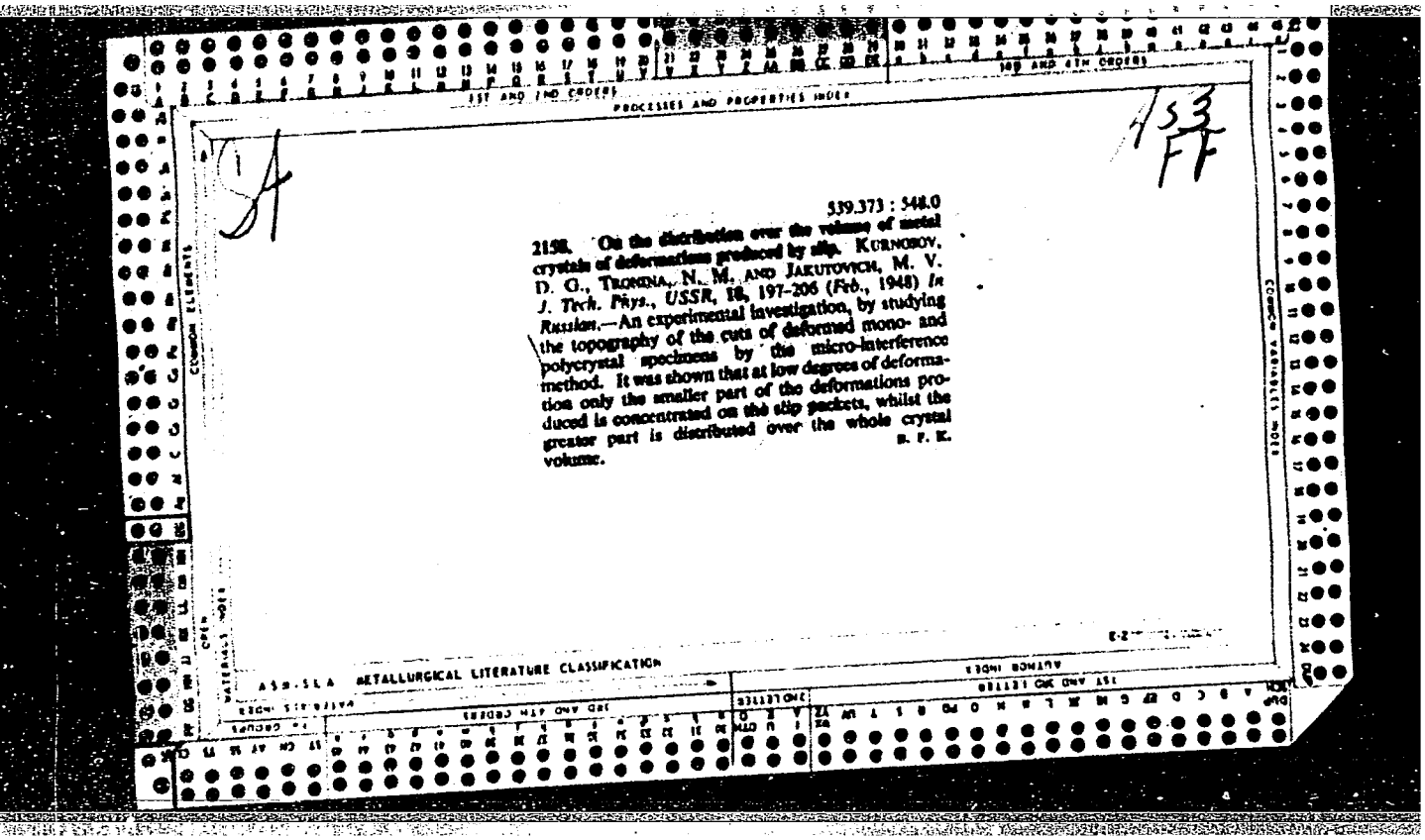
Distribution of deformation in metallic crystals of zinc during deformation by slip. D. G. Kurnosov, N. M. Tronina and M. V. Yakutovich. *J. Tech. Phys.*, 18, (U.S.S.R.) 197-200(1948).—The distribution of plastic deformation by slip is experimentally detd. in Zn crystals by studying the topography of the surface of a microsection of deformed mono- and polycryst. samples. A microinterferometer was used as a microscope objective to measure irregularities in the surface of approx. 5×10^{-3} mm. By examn. of the interference bands produced on the surface with light of λ 5000 A., the degree of deformation of the surface and the nature of the deformation can be detd. accurately during formation and development. Chemically pure Zn, twice distd. *in vacuo*, and one sample of α-Fe were examd., deformation being produced by a specially designed press at 19°, 200°, and −196°. For a monocryst. specimen, plastic deformation is localized only to an insignificant extent in the slip planes, most is distributed through the crystal with low deformations. The vol. of the crystal is involved in deformation from the beginning, and this accounts for the hardening of all the crystal without assuming the presence of a sharply-defined structure irregularity or the formation of sep. cryst. layers. B. A

1951



19c-15. Distribution of Deformation Throughout the Volume of Metallic Crystals During Formation of Slip Bands. (In Russian.) D. G. Kurnosov, N. M. Troniina, and M. V. Yakutovich. Zhurnal Tekhnicheskoi Fiziki (Journal of Technical Physics), v. 18, Feb. 1948, p. 197-200.

Distribution in a zinc crystal was studied experimentally. It was shown that, for small deformations, only an insignificant part of the total deformation is localized in the slip band, most of it being distributed throughout the entire volume.



539.373 : 548.0

2158. On the distribution over the volume of metal crystals of deformations produced by slip. KURNOSOV, D. G., TROMINA, N. M. AND JAKUTOVICH, M. V. *J. Tech. Phys., USSR*, **18**, 197–206 (Feb., 1948) *In Russian.*—An experimental investigation, by studying the topography of the cuts of deformed mono- and polycrystal specimens by the micro-interference method. It was shown that at low degrees of deformation only the smaller part of the deformations produced is concentrated on the slip packets, whilst the greater part is distributed over the whole crystal volume. B. P. K.

Met. Abstract

3

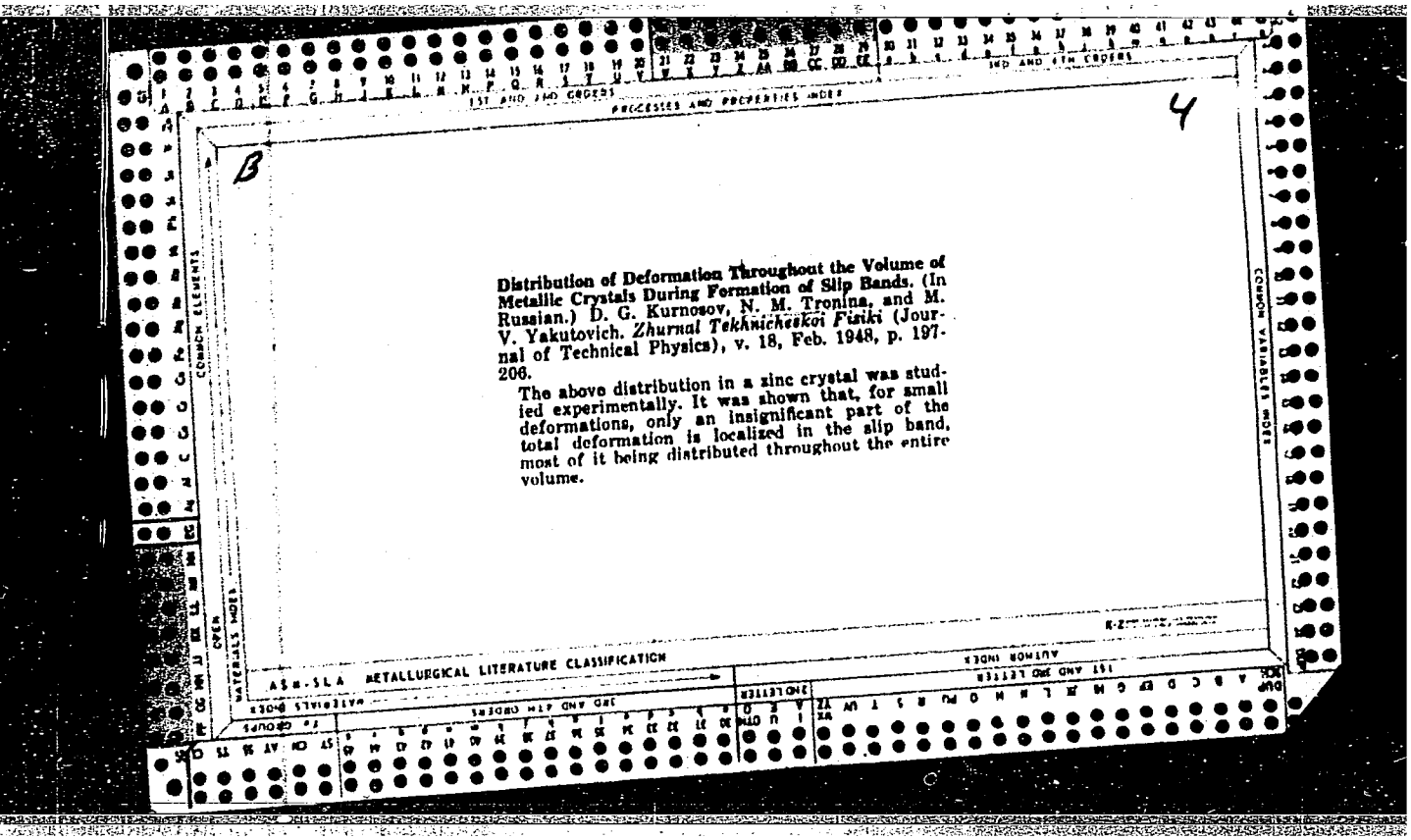
***Distribution of Deformation in Metallic Crystals [of Zinc] During Deformation by Slip.** D. G. Kurnosov, N. M. Tronina, and M. V. Yakutovich (*ZAav. Tekhn. Fiziki*, [1948, **18**, (2), 197–206; *Brit. Abs.*, **1948**, [BI], 491).—[In Russian]. The distribution of plastic deformation by slip was experimentally determined in Zn crystals by studying the topography of the surface of a micro-section of deformed mono- and polycryst. samples. A micro-interferometer was used as a microscope objective to measure irregularities in the surface of approx. 5×10^{-5} mm. By examination of the interference bands produced on the surface with light of λ 5000 Å., the degree of deformation of the surface and the nature of the deformation could be determined accurately during formation and development. Chem. pure Zn, twice distilled *in vacuo*, and one sample of α-Fe were examined, deformation being produced by a specially designed press at 19°, 200°, and −196° C. For a monocryst. specimen, plastic deformation is localized only to an insignificant extent in the slip planes; most of it is distributed through the crystal with low deformations. The vol. of the cryst. is involved in deformation from the beginning, and this accounts for the hardening of all the crystal without assuming the presence of a sharply defined structure irregularity or the formation of separate cryst. layers.

Bi. Abs.

BI-6, Non-ferrous Metallurgy

Distribution of deformation in metallic crystals [of zinc] during deformation by slip. D. G. Kurnosov, N. M. Tronina, and M. V. Yakutovich (*J. Tech. Phys., USSR*, 1948, **18**, 197—208).—The distribution of plastic deformation by slip is experimentally determined in Zn crystals by studying the topography of the surface of a microsection of deformed mono- and poly-cryst. samples using a microinterferometer as a microscope objective to measure irregularities in the surface of $\sim 5 \times 10^{-5}$ mm. By examination of the interference bands produced on the surface using light of λ 5000 Å., the degree of deformation of the surface and the nature of the deformation can be determined accurately during formation and development. Chemically-pure Zn, twice distilled in vac., and one sample of α-Fe were examined, deformation being produced by a specially designed press at 19°, 200°, and −196°. For a mono-cryst. specimen, plastic deformation is localised only to an insignificant extent in the slip planes, most being distributed through the crystal with low deformations. The vol. of the crystal is involved in deformation from the beginning and this accounts for the hardening of all the crystal without assuming the presence of a sharply-defined structure irregularity or the formation of separate cryst. layers.

W. Hughes.



Distribution of Deformation Throughout the Volume of Metallic Crystals During Formation of Slip Bands. (In Russian.) D. G. Kurnosov, N. M. Tronina, and M. V. Yakutovich. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 18, Feb. 1948, p. 197-206.

The above distribution in a zinc crystal was studied experimentally. It was shown that, for small deformations, only an insignificant part of the total deformation is localized in the slip band, most of it being distributed throughout the entire volume.

TRONKOV, D.

Character of the Old Cimmerian floor, and type and time of the Old Cimmerian tectonic movements in Northwestern Bulgaria. Trudove vurkhu geol strat 5:171-196 '63.

ORMANETS, V.; TRONOVA, V.A.; TOPCHIYEVA, K.V.

Simplified method for the determination of mono-,di-, and triethylamines in a six-component mixture obtained in the catalytic deamination of aliphatic amines over dehydrating oxide catalysts. Zhur.anal.khim. 17 no.9:1109-1113 D '62. (MIRA 16:2)

1. M.V. Lomonosov Moscow State University.
(Amines)

TIKHMENEV, S.S.; TRONINA, V.P.; CHIKIN, V.A.; KNYAZEV, G.N.; GULYAYEV, M.P.; ZAKHAROV, Yu.Ye.; CHIKINA, I.S.; LYAMIN, V.I.; BOCHAROV, V.K.; SHIGIN, Ye.K.; KROTOV, V.F.

Scientific, pedagogical and social activity of Professor V.V. Dobronravov. [Trudy] MVTU no.104:7-18 '61. (MIRA 15:2)
(Dobronravov, Vladimir Vasil'evich, 1901-)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001756720013-9"

S/549/61/000/104/001/018
D237/D304

AUTHORS: Tikhmenev, S.S., Tronina, V.P., Chikin, V.A., Knyazev, G. N., Gulyayev, M.P., Zakharov, Yu.Ye., Chikina, I.S., Lyamin, V.I., Bocharov, V.K., Shigin, Ye.K., and Krotov, V.F.

TITLE: Scientific, pedagogical and general activities of Professor V.V. Dobronravov

SOURCE: Moscow, Vyssheye tekhnicheskoye uchilishche [Trudy], no. 104, 1961. Mekhanika, 7 - 18

TEXT: On the occasion of his 60th birthday and the 35th anniversary of the scientific and pedagogical activity of Professor, Doctor of Physical and Mathematical Sciences, Vladimir Vasilyevich Dobronravov who is at present Professor of Theoretical Mechanics at MVTU im. N.E. Baumana (MVTU im. N.E. Bauman), eleven of his students present this appreciation. V.V. Dobronravov was born on March 17th, 1901. In 1924 he obtained his degree in mathematics at the Saratovskiy Gosudarstvennyy universitet im. N.G. Chernyshevskiy (Saratov State University im. N.G. Chernyshevskiy). In 1927 he accepted the

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Scientific, pedagogical and ...

post of Assistant to the Professor of Physics at the Astrakhan State Medical Institute, where in subsequent years he published a paper in neuro-biophysics. During 1929-31, he was Professor of Mathematics at the Saratov Agricultural Institute and lectured at Saratov University. From 1931 he worked in a number of higher educational establishments in Moscow and was associated with Moscow University from 1931 to 1952. In 1946 he was awarded a doctorate at Moscow State University and in 1951 he was elected to the Department of Theoretical Mechanics at MVTU im. N.E. Bauman, where in subsequent years, under his guidance, courses in specialized branches such as stability of motion, gyroscopy, oscillation, variational method etc. were developed. During his career the main contributions made were in the field of mechanics of non-holonomic systems. After 1950 he published papers on kinetics of motion of rigid body (Trudy MIKhM, no. 2, (10), 1950), stability of linear systems of diff. equations with constant coefficients in (Avtomatika i Telemekhanika, v. 17, no. 3, 1956) etc. In the 1950's he also became interested in astronautics. He has been a member of the Moscow Mathematical Society since 1944, and is an active member of the Methodological Commis-

Scientific, pedagogical and ...

sion on the Theoretical Mechanics of the Ministry of the Secondary and Higher Education of USSR. At present he is engaged in preparing a monograph on non-holonomic systems.

ASSOCIATION: Moskovskoye ordena Lenina i ordena trudovogo krasnogo znameni vyssheye tekhnicheskoye uchilishche im. Baumana (Moscow Order of Lenin and Order of the Red Banner of Labor Higher Technical School im. Bauman)

Card 3/3

TRONKIN, M.

Collective farm representatives discuss working accounts of construction organizations. Sel'. stroi. 13 no.6:8 Je '58. (MIRA 11:6)

1.Nachal'nik otdela po stroitel'stvu v kolkhozakh Sal'skogo rayona, Rostovskoy oblasti.
(Salsk District--Building)

NAIDENOV, Ert., dots. inzh.; TRONKOVA, M., inzh.

Influence of the coil jackets of alternating-current electromagnets on their temperature during air cooling. Mashinostroene 13 no.5:34-35 '64

1. NIPKIEP.

B/844/62/000/000/120/129
D207/D307

AUTHORS: Boldyrev, V. V., Zalharov, Yu. A., Yeroshkin, V. I. and Tronov, A. B.

TITLE: Effect of preliminary irradiation on the rate of thermal decomposition of silver oxalate and carbonate containing admixtures

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 693-698

TEXT: Pure Ag_2CO_3, pure $Ag_2C_2O_4$ and the solid solutions 97.5% $Ag_2C_2O_4$ + 2.5% CdC_2O_4, 97.5% Ag_2CO_3 + 2.5% $CdCO_3$, 95% $Ag_2C_2O_4$ + 5% CdC_2O_4 were subjected to γ rays, x rays and uv radiations. A study was made of the effect of the cadmium impurity on (1) thermal decomposition after irradiation of the carbonate and oxalate, and (2) radiolysis of these two compounds. Preliminary irradiation with

Card 1/2

S/844/62/000/000/120/129
D207/D307

Effect of preliminary ...

Co^{60} γ rays (50 c source) or uv radiation from a ПРК-7 (PRK-7) lamp accelerated subsequent thermal decomposition of pure oxalate at 158°C but this radiation effect was reduced on addition of Cd. X rays from a 1 ВПМ-200 (1 BPM-200) tube accelerated subsequent thermal decomposition of pure carbonate at 151°C and this acceleration was intensified by adding Cd. Cadmium reduced the photolytic action of γ rays and uv in the case of the oxalate but it intensified the x ray photolysis of the carbonate. The opposite effects of cadmium in these two compounds are due to the difference in the mechanism of decomposition: in the oxalate the anion-cation bonds are broken and metallic silver is produced; in the carbonate the internal bonds are severed in the CO_3 ion and Ag_2O is formed. Cadmium acts by producing deformations and lattice defects as well as by taking part in electronic and ionic processes of decomposition. There are 3 figures and 5 tables.

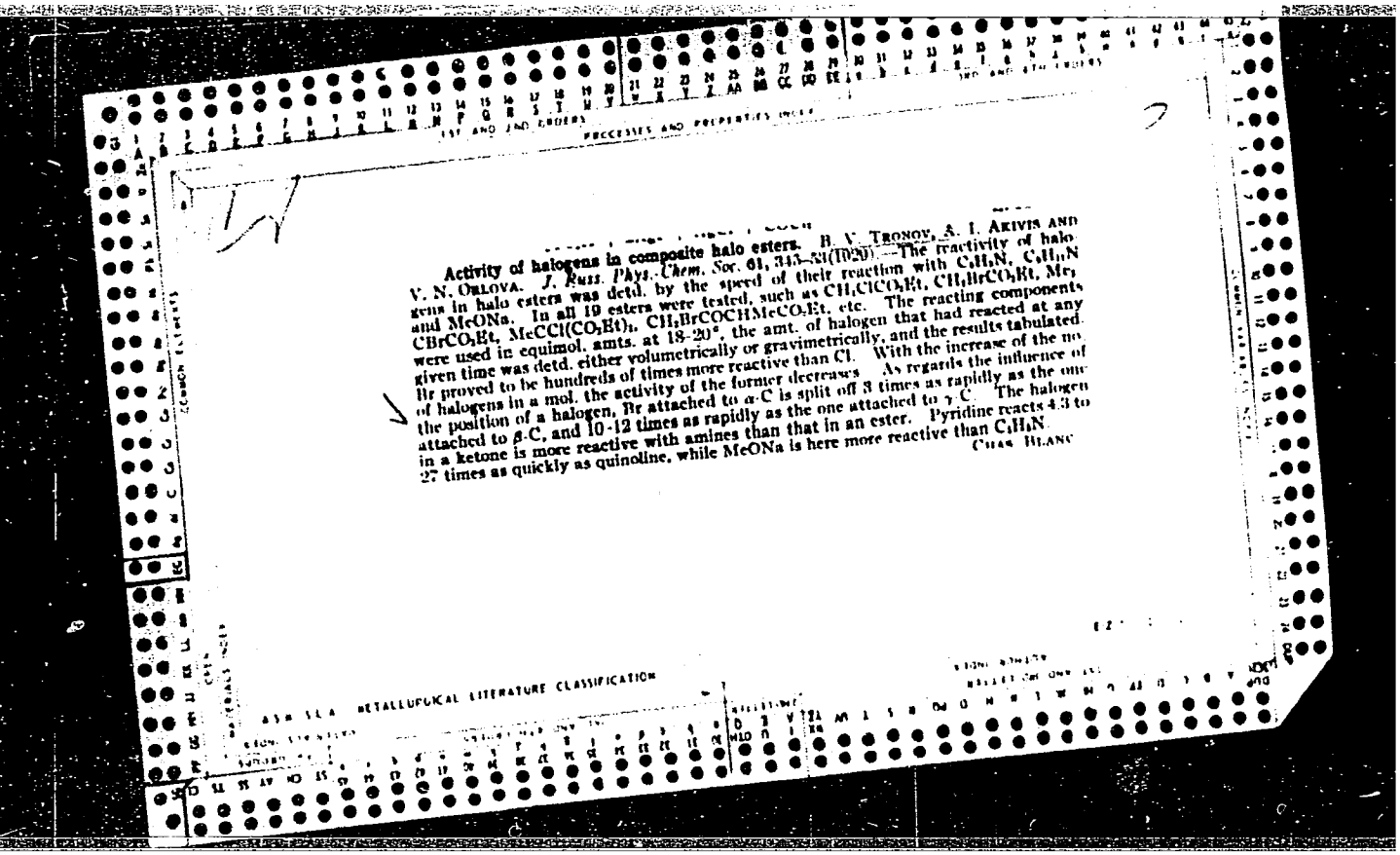
ASSOCIATION: Tomskiy politekhnicheskiy institut im. S. M. Kirova
(Tomsk Polytechnic Institute im. S. M. Kirov)

Card 2/2

TRONOV, A.B.

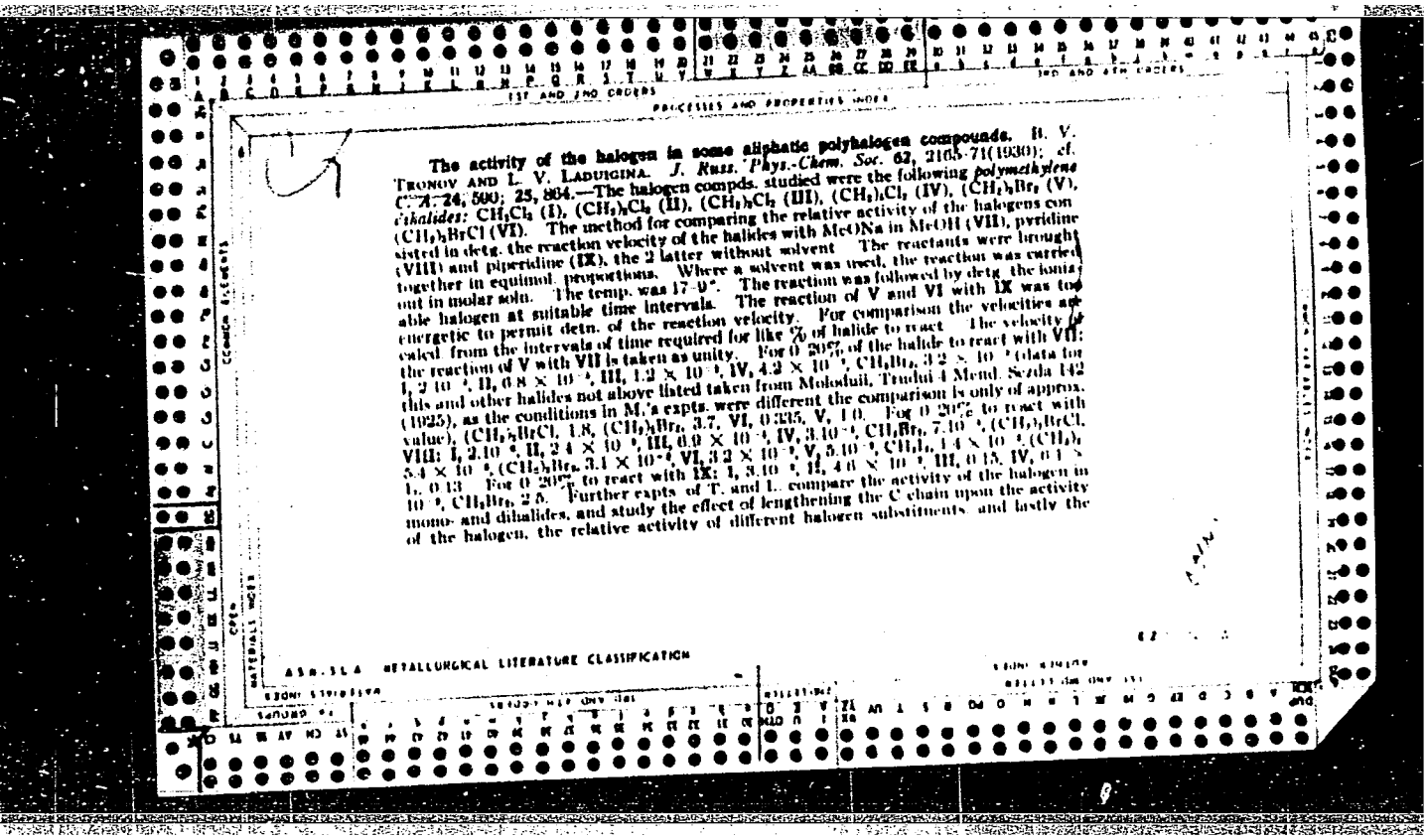
Interaction of nitro compounds with some iodides. Zhur. ob. khim. 35 no.9:1545-1548 S '65. (MIRA 18:10)

1. Tomskiy meditsinskiy institut.



Activity of halogens in composite halo esters. B. V. Tronov, A. I. Arivis and V. N. Orlova. *J. Russ. Phys. Chem. Soc.* 61, 345–53(1929).—The reactivity of halogens in halo esters was detd. by the speed of their reaction with C_5H_5N, $C_6H_{11}N$ and MeONa. In all 19 esters were tested, such as CH_2ClCO_2Et, CH_2BrCO_2Et, $MeCBrCO_2Et$, $MeCCl(CO_2Et)_2$, $CH_2BrCOCHMeCO_2Et$, etc. The reacting components were used in equimol. amts. at 18–20°, the amt. of halogen that had reacted at any given time was detd. either volumetrically or gravimetrically, and the results tabulated. Br proved to be hundreds of times more reactive than Cl. With the increase of the no. of halogens in a mol. the activity of the former decreases. As regards the influence of the position of a halogen, Br attached to α-C is split off 3 times as rapidly as the one attached to γ-C. The halogen attached to β-C, and 10–12 times as rapidly as the one attached to γ-C. The halogen in a ketone is more reactive with amines than that in an ester. Pyridine reacts 4.3 to 27 times as quickly as quinoline, while MeONa is here more reactive than C_5H_5N.

Chas. Blanc



The activity of the halogen in some aliphatic polyhalogen compounds. B. V. TRONOV AND L. V. LADUIGINA. *J. Russ. Phys.-Chem. Soc.* 62, 2165-71(1930); cf. *C. A.* 24, 500; 25, 804.—The halogen compds. studied were the following *polymethylene dihalides:* CH_2Cl_2 (I), $(CH_2)_2Cl_2$ (II), $(CH_2)_3Cl_2$ (III), $(CH_2)_4Cl_2$ (IV), $(CH_2)_3Br_2$ (V), $(CH_2)_3BrCl$ (VI). The method for comparing the relative activity of the halogens consisted in detg. the reaction velocity of the halides with MeONa in MeOH (VII), pyridine (VIII) and piperidine (IX), the 2 latter without solvent. The reactants were brought together in equimol. proportions. Where a solvent was used, the reaction was carried out in molar soln. The temp. was 17-9°. The reaction was followed by detg. the ionizable halogen at suitable time intervals. The reaction of V and VI with IX was too energetic to permit detn. of the reaction velocity. For comparison the velocities are calcd. from the intervals of time required for like % of halide to react. The velocity of the reaction of V with VII is taken as unity. For 0.20% of the halide to react with VII: I, $2 \cdot 10^{-3}$; II, 0.8×10^{-4}; III, 1.2×10^{-4}; IV, 4.2×10^{-4}; CH_2Br_2, 3.2×10^{-3} (data for this and other halides not above listed taken from Molodtsii, Trudui Mendl. Semda 142 (1925), as the conditions in M.'s expts. were different the comparison is only of approx. value). $(CH_2)_3BrCl$, 1.8; $(CH_2)_3Br_2$, 3.7; VI, 0.335; V, 1.0. For 0.20% to react with VIII: I, 2.10^{-3}; II, 2.4×10^{-4}; III, 0.9×10^{-4}; IV, 3.10^{-4}; CH_2Br_2, 7.10^{-3}; $(CH_2)_3BrCl$, 5.4×10^{-4}; $(CH_2)_3Br_2$, 3.1×10^{-4}; VI, 3.2×10^{-4}; V, 5.10^{-4}; CH_2I_2, 1.4×10^{-3}; $(CH_2)_3I_2$, 0.13. For 0.20% to react with IX: I, 3.10^{-3}; II, 4.6×10^{-4}; III, 0.15; IV, 0.1×10^{-3}; CH_2Br_2, 2.5. Further expts. of T. and L. compare the activity of the halogen in mono- and dihalides, and study the effect of lengthening the C chain upon the activity of the halogen, the relative activity of different halogen substituents, and lastly the

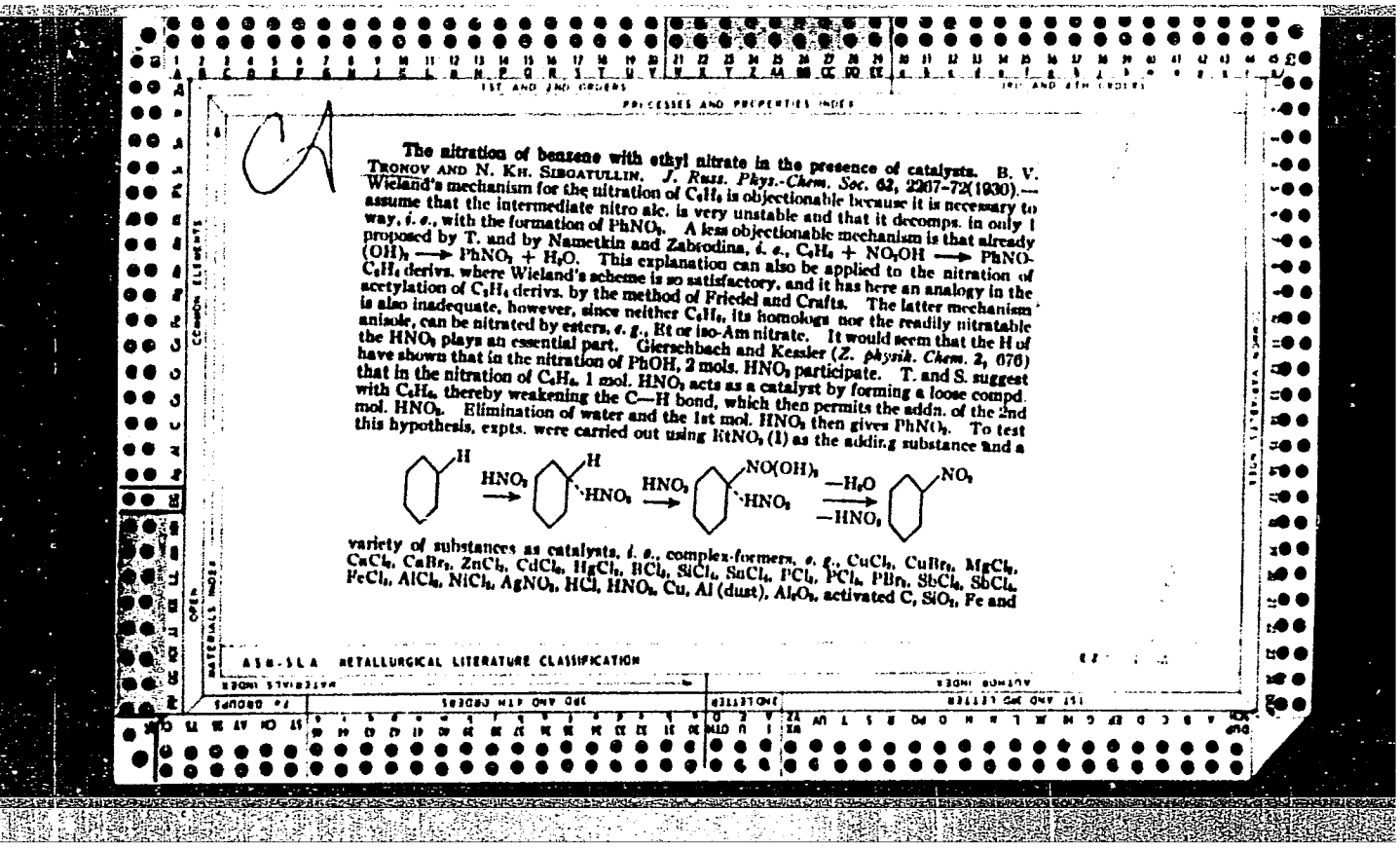
relative degree of influence exerted upon the activity of Br by other halogen substituents, e. g., Cl and Br. The activity ratios $X'(CH_2)_nX : H(CH_2)_nX$ found were. Where X and X' are Cl, and n is 2 with VIII, 0.2, n is 3, with VII, 8.0, VIII, 3.8, IX, 13. Where X and X' are Br: n is 1, with VII, 1.5×10^{-4}, VIII, 3.10^{-4}; n is 2, with VII, 18.5, VIII, 0.084; n is 3, with VII, 14, VIII, 3.1. Where X is Br and X' is Cl: n is 2, with VII, 18.5, VIII, 0.084; 0.15; n is 3, with VII, 4.7, VIII, 2.0. Where X and X' are I: n is 1, with VIII, 2.10^{-4}; n is 2, with VIII, 0.34. In comparing the activity in compds. of different chain lengths that of the halogen in 1 carbon compds. is taken as unity.

	X is Cl			X is Br		X is I
n	VII	VIII	IX	VII	VIII	VIII
1	1	1	1	1	1	1
2	3.4	12	1.5	1100	4.4	93
3	6	350	5	300	70	–
5	2.1	180	2	–	–	–

	VII		VIII		IX	
	Cl	Br	Cl	Br	I	Cl Br
CH_2X_2	1	1.6	1	350	700	1 80
$(CH_2)_2X_2$	1	540	1	130	5400	
$(CH_2)_3X_2$	1	83	1	70	–	

The relative degree of influence exerted by Cl and Br upon another Br is expressed by the ratios $(CH_2)_2Br_2 : (CH_2)_2BrCl$, with VII, 2, VIII, 0.57; $(CH_2)_3Br_2 : (CH_2)_3BrCl$, with VII, 3, VIII, 1.6. The generalizations made are: in dihalides the X is more reactive than in the corresponding monohalide, although 2 halogen atoms attached to the same C have a lessened activity. With increasing chain length, the activity of the X increases to a max. (where n is 3 or 4 ?) and then decreases again. No generalization can be made concerning the influence of the substance removing halogen. As in most org. compds., the activity of the halogen increases from Cl to I, and dibromides were more active than bromochlorides. The results are discussed from the viewpoint of the electron theory.

Lewis W. Bass



The nitration of benzene with ethyl nitrate in the presence of catalysts. B. V. Tronov and N. Kh. Sibgatullin. *J. Russ. Phys.-Chem. Soc.* 62, 2267-72(1930).—Wieland's mechanism for the nitration of C_6H_6 is objectionable because it is necessary to assume that the intermediate nitro alc. is very unstable and that it decomps. in only 1 way, *i. e.*, with the formation of $PhNO_2$. A less objectionable mechanism is that already proposed by T. and by Nametkin and Zabrodina, *i. e.*, $C_6H_6 + NO_2OH \longrightarrow PhNO(OH)_2 \longrightarrow PhNO_2 + H_2O$. This explanation can also be applied to the nitration of C_6H_5 derivs. where Wieland's scheme is so satisfactory, and it has here an analogy in the acetylation of C_6H_5 derivs. by the method of Friedel and Crafts. The latter mechanism is also inadequate, however, since neither C_6H_6, its homologs nor the readily nitratable anisole, can be nitrated by esters, *e. g.*, Et or iso-Am nitrate. It would seem that the H of the HNO_3 plays an essential part. Gierschbach and Kessler (*Z. physik. Chem.* 2, 676) have shown that in the nitration of PhOH, 2 mols. HNO_3 participate. T. and S. suggest that in the nitration of C_6H_6, 1 mol. HNO_3 acts as a catalyst by forming a loose compd. with C_6H_6, thereby weakening the C—H bond, which then permits the addn. of the 2nd mol. HNO_3. Elimination of water and the 1st mol. HNO_3 then gives $PhNO_2$. To test this hypothesis, expts. were carried out using $EtNO_3$ (I) as the addng. substance and a variety of substances as catalysts, *i. e.*, complex-formers, *e. g.*, $CuCl_2$, $CuBr_2$, $MgCl_2$, $CaCl_2$, $CaBr_2$, $ZnCl_2$, $CdCl_2$, $HgCl_2$, BCl_3, $SiCl_4$, $SnCl_4$, PCl_3, PCl_5, PBr_3, $SbCl_3$, $SbCl_5$, $FeCl_3$, $AlCl_3$, $NiCl_2$, $AgNO_3$, HCl, HNO_3, Cu, Al (dust), Al_2O_3, activated C, SiO_2, Fe and

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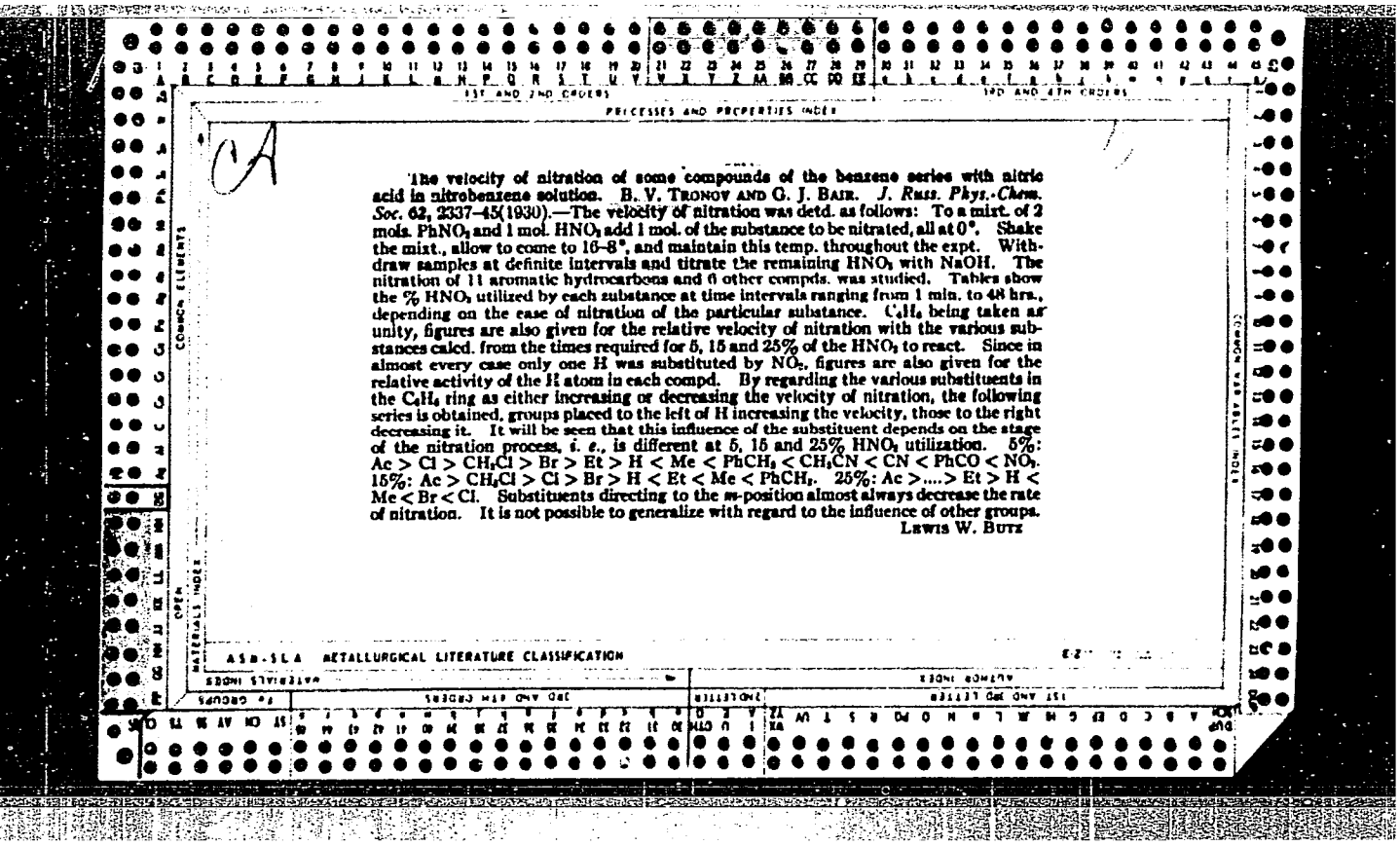
Fe_2O_3. I was mixed with C_6H_6 in equimol. proportions. $AlCl_3$ was added in quantities of 0.1, 0.3, 0.5 and 1.0 mol. Of the other catalysts 0.5 mol. was added, which was the optimum quantity for $AlCl_3$. For HCl, the satd. soln. in C_6H_6 was used. Only 0.1 mol. HNO_3 was introduced to preclude the possibility of an ordinary nitration. The mixts. were let stand 48 hrs., dild. with water, extd. with Et_2O, the Et_2O soln. dried with $CaCl_2$, the Et_2O evapd., and the residue heated 1 hr. at 105-10° to volatilize unchanged I and C_6H_6. The catalysts giving pos. results, the amts. used and the yields of $PhNO_2$ reported follow: $AlCl_3$, 0.1 mol., 12%; 0.3 mol., 39.5%; 0.5 mol., 50.80%; 1.0 mol., 16.0%; $SnCl_4$, 0.5 mol., 35%; $SbCl_5$, 0.5 mol., 7.1%; $FeCl_3$, 0.5 mol., 0.8%. The inertness of the remaining substances tried as catalysts may in part be due to their insoly., although BCl_3, $SiCl_4$ and PCl_5 are sol. in C_6H_6 and Et_2O. I was found to react vigorously with $AlCl_3$ and $SnCl_4$, and the resulting mixts. give fair yields (22.3% with $AlCl_3$) of $PhNO_2$ with C_6H_6. It is therefore possible that the catalyst forms a complex with I and not with C_6H_6 during nitration, thus explaining the failure as nitration catalysts of those substances which are known to form complexes with C_6H_6. Applied to the direct nitration of C_6H_6 by HNO_3, this theory would require that 2 mols. HNO_3 form a complex which then reacts with PhH.

Lewis W. Bass



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The velocity of nitration of some compounds of the benzene series with nitric acid in nitrobenzene solution. B. V. Tronov and G. J. Bair. *J. Russ. Phys.-Chem. Soc.* 62, 2337–45(1930).—The velocity of nitration was detd. as follows: To a mixt. of 2 mols. $PhNO_2$ and 1 mol. HNO_3 add 1 mol. of the substance to be nitrated, all at 0°. Shake the mixt., allow to come to 16–8°, and maintain this temp. throughout the expt. Withdraw samples at definite intervals and titrate the remaining HNO_3 with NaOH. The nitration of 11 aromatic hydrocarbons and 6 other compds. was studied. Tables show the % HNO_3 utilized by each substance at time intervals ranging from 1 min. to 48 hrs., depending on the ease of nitration of the particular substance. C_6H_6 being taken as unity, figures are also given for the relative velocity of nitration with the various substances calcd. from the times required for 5, 15 and 25% of the HNO_3 to react. Since in almost every case only one H was substituted by NO_2, figures are also given for the relative activity of the H atom in each compd. By regarding the various substituents in the C_6H_5 ring as either increasing or decreasing the velocity of nitration, the following series is obtained, groups placed to the left of H increasing the velocity, those to the right decreasing it. It will be seen that this influence of the substituent depends on the stage of the nitration process, *i. e.*, is different at 5, 15 and 25% HNO_3 utilization. 5%: Ac > Cl > CH_2Cl > Br > Et > H < Me < $PhCH_3$ < CH_2CN < CN < PhCO < NO_2. 15%: Ac > CH_2Cl > Cl > Br > H < Et < Me < $PhCH_3$. 25%: Ac >....> Et > H < Me < Br < Cl. Substituents directing to the *m*-position almost always decrease the rate of nitration. It is not possible to generalize with regard to the influence of other groups.

Lewis W. Butz

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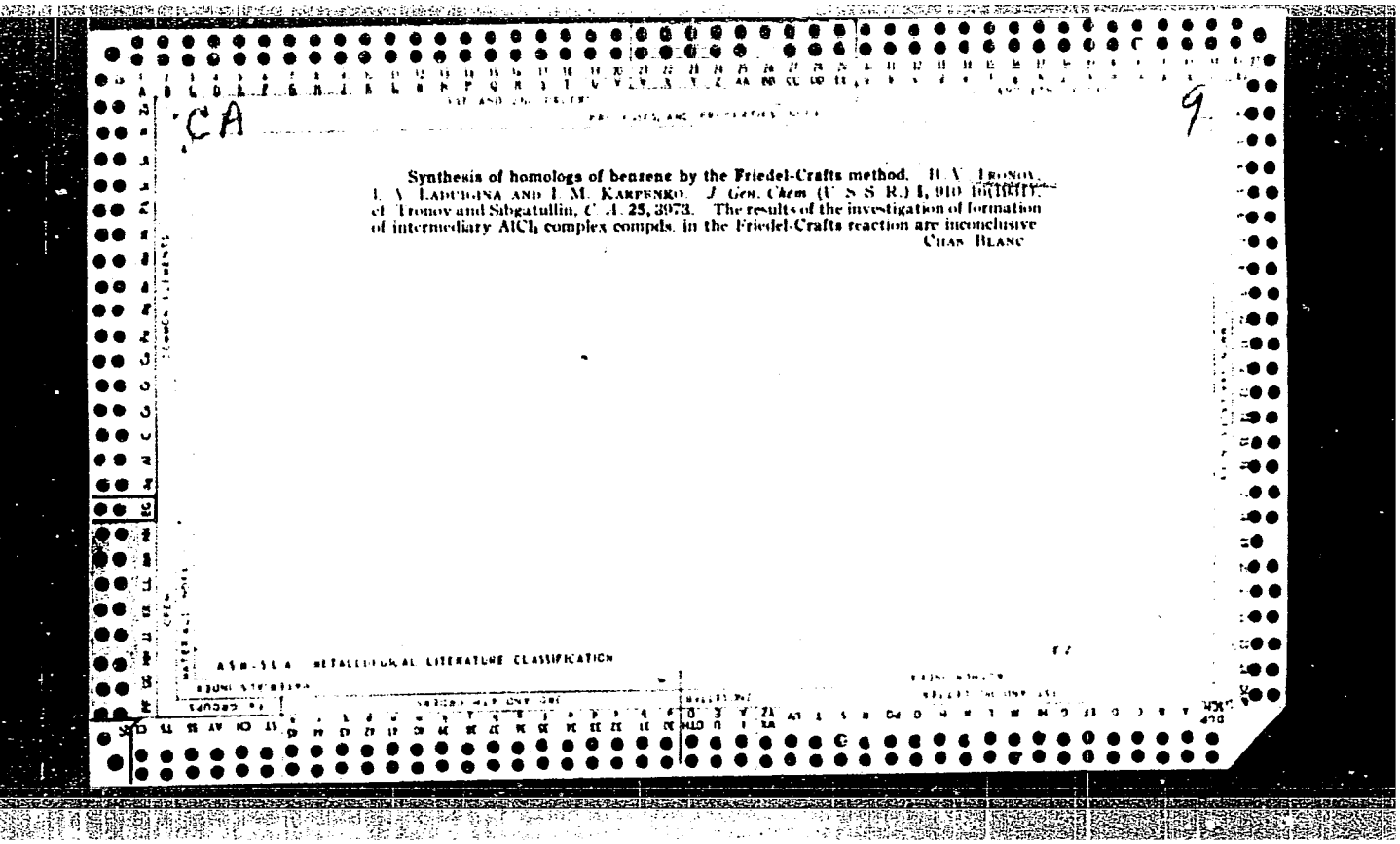

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Synthesis of homologs of benzene by the Friedel-Crafts method. B. V. [illegible], L. V. Ladutchina and I. M. Karpenko. *J. Gen. Chem.* (U. S. S. R.) 1, 910 [illegible]. cf. Tronov and Sibgatullin, *C. A.* 25, 3973. The results of the investigation of formation of intermediary $AlCl_3$ complex compds. in the Friedel-Crafts reaction are inconclusive.

Chas. Blanc

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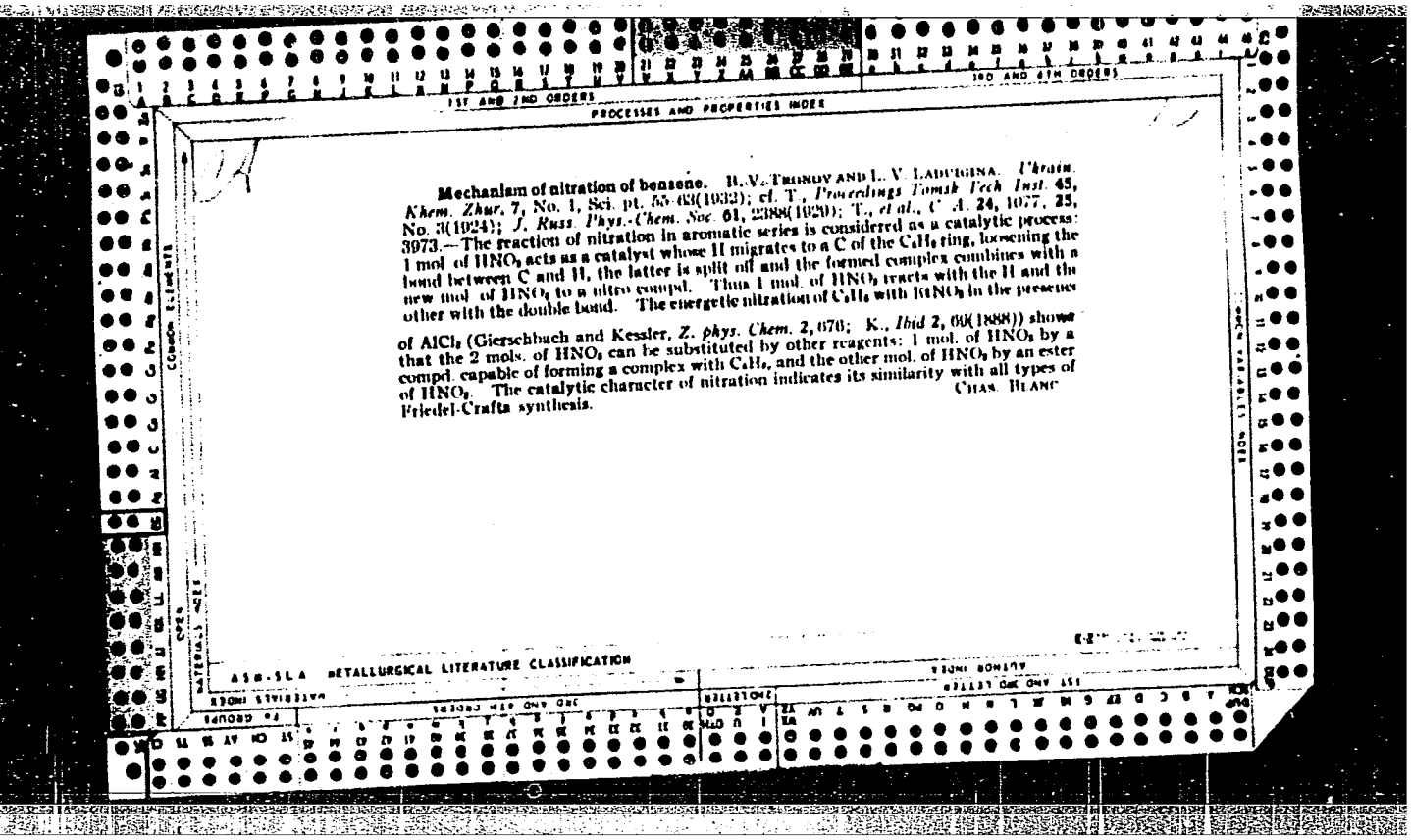

1ST AND 2ND ORDERS

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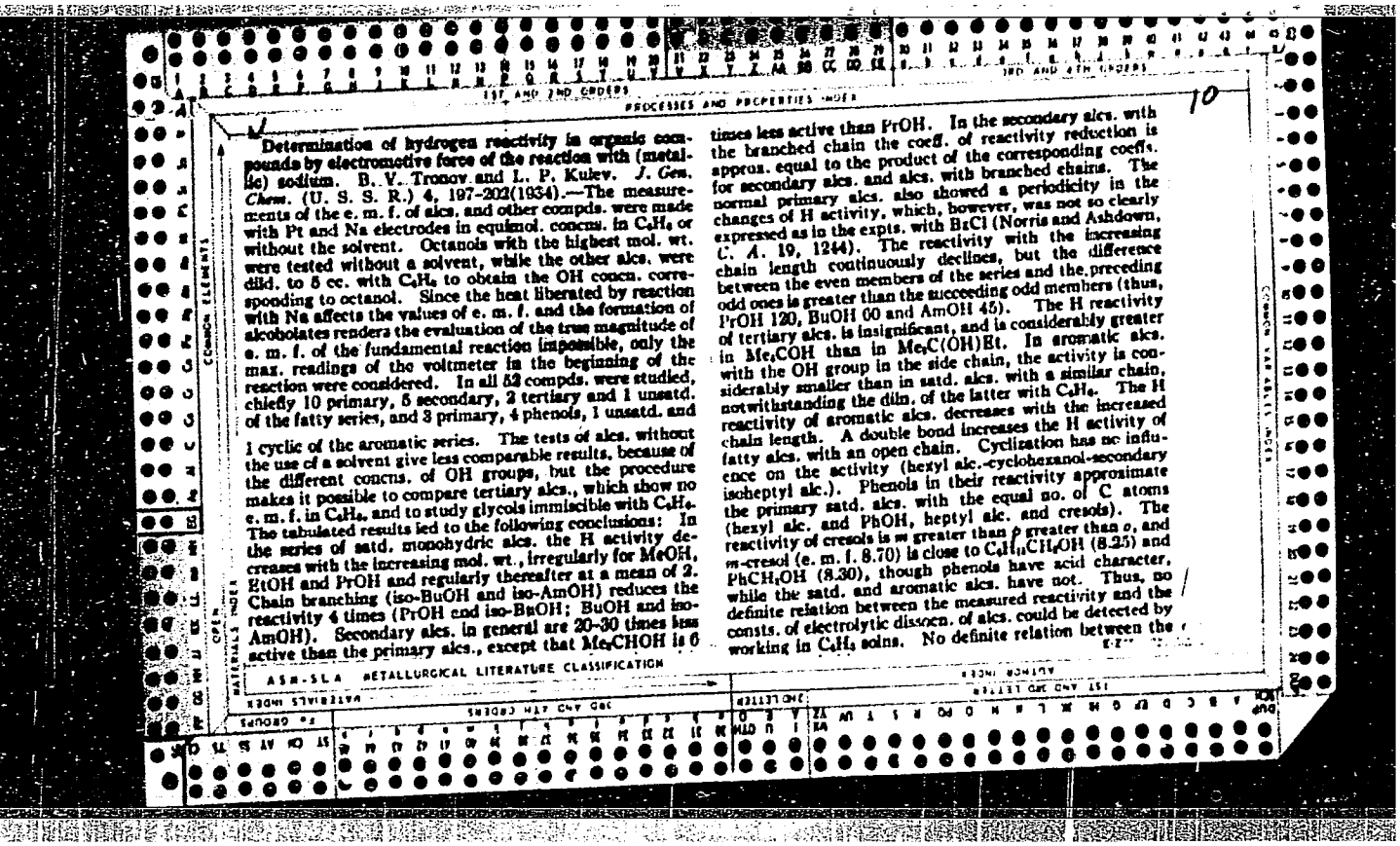
3RD AND 4TH ORDERS

Mechanism of nitration of benzene. B. V. TRONOV AND L. V. LADUTGINA. *Ukrain. Khem. Zhur.* 7, No. 1, Sci. pt. 55-63(1932); cf. T., *Proceedings Tomsk Tech Inst.* 45, No. 3(1924); *J. Russ. Phys.-Chem. Soc.* 61, 2388(1929); T., *et al.*, *C. A.* 24, 1077, 25, 3973.—The reaction of nitration in aromatic series is considered as a catalytic process: 1 mol. of HNO_3 acts as a catalyst whose H migrates to a C of the C_6H_6 ring, loosening the bond between C and H, the latter is split off and the formed complex combines with a new mol. of HNO_3 to a nitro compd. Thus 1 mol. of HNO_3 reacts with the H and the other with the double bond. The energetic nitration of C_6H_6 with HNO_3 in the presence of $AlCl_3$ (Gierschbach and Kessler, *Z. phys. Chem.* 2, 676; K., *Ibid* 2, 686(1888)) shows that the 2 mols. of HNO_3 can be substituted by other reagents: 1 mol. of HNO_3 by a compd. capable of forming a complex with C_6H_6, and the other mol. of HNO_3 by an ester of HNO_3. The catalytic character of nitration indicates its similarity with all types of Friedel-Crafts synthesis.

CHAS. BLANC

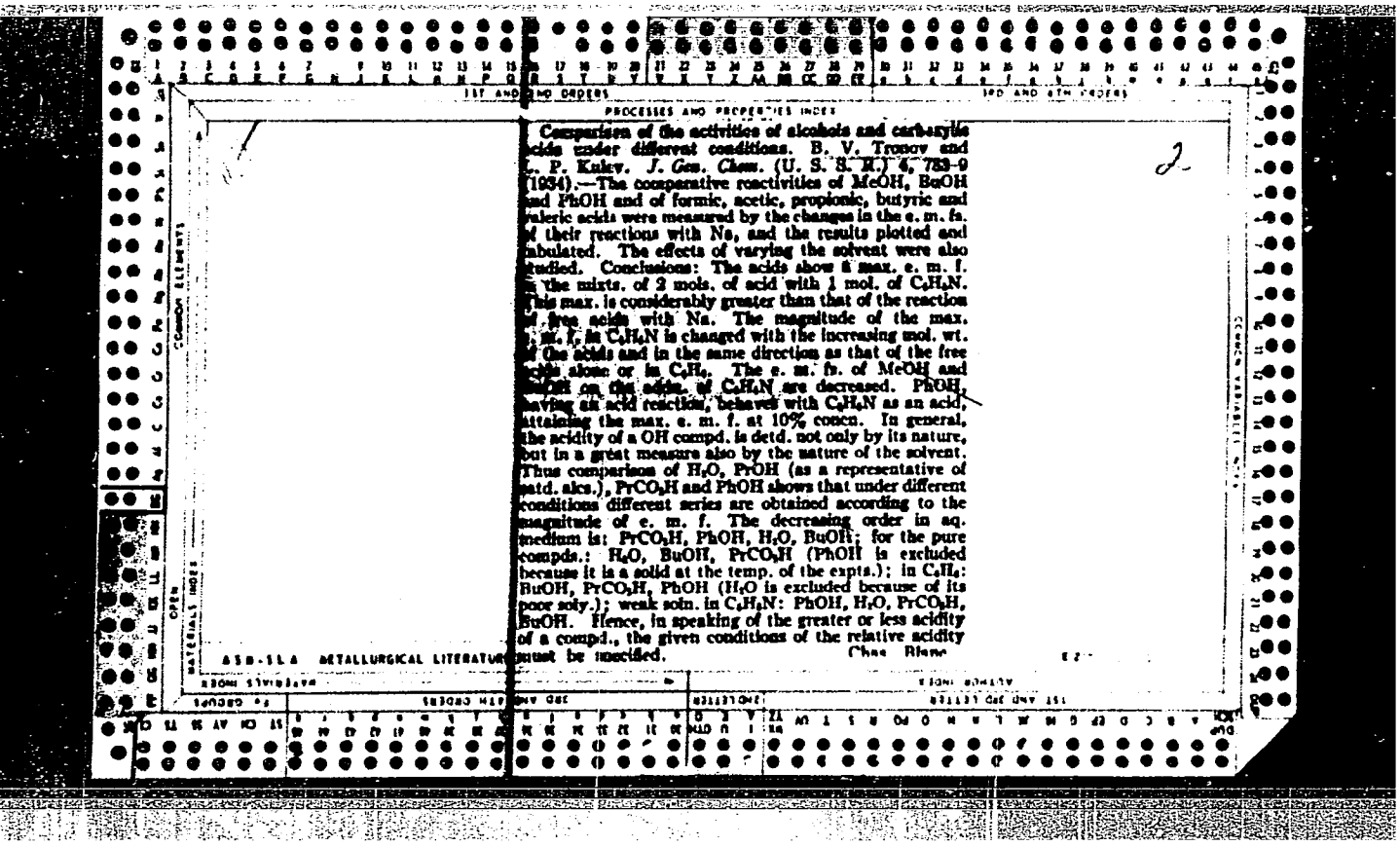
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



Determination of hydrogen reactivity in organic compounds by electromotive force of the reaction with (metallic) sodium. B. V. Tronov and L. P. Kulev. *J. Gen. Chem.* (U. S. S. R.) 4, 197-202(1934).—The measurements of the e. m. f. of alcs. and other compds. were made with Pt and Na electrodes in equimol. concns. in C_6H_6 or without the solvent. Octanols with the highest mol. wt. were tested without a solvent, while the other alcs. were dild. to 5 cc. with C_6H_6 to obtain the OH concn. corresponding to octanol. Since the heat liberated by reaction with Na affects the values of e. m. f. and the formation of alcoholates renders the evaluation of the true magnitude of e. m. f. of the fundamental reaction impossible, only the max. readings of the voltmeter in the beginning of the reaction were considered. In all 52 compds. were studied, chiefly 10 primary, 5 secondary, 2 tertiary and 1 unsatd. of the fatty series, and 3 primary, 4 phenols, 1 unsatd. and 1 cyclic of the aromatic series. The tests of alcs. without the use of a solvent give less comparable results, because of the different concns. of OH groups, but the procedure makes it possible to compare tertiary alcs., which show no e. m. f. in C_6H_6, and to study glycols immiscible with C_6H_6. The tabulated results led to the following conclusions: In the series of satd. monohydric alcs. the H activity decreases with the increasing mol. wt., irregularly for MeOH, EtOH and PrOH and regularly thereafter at a mean of 2. Chain branching (iso-BuOH and iso-AmOH) reduces the reactivity 4 times (PrOH and iso-BuOH; BuOH and iso-AmOH). Secondary alcs. in general are 20-30 times less active than the primary alcs., except that Me_2CHOH is 6 times less active than PrOH. In the secondary alcs. with the branched chain the coeff. of reactivity reduction is approx. equal to the product of the corresponding coeffs. for secondary alcs. and alcs. with branched chains. The normal primary alcs. also showed a periodicity in the changes of H activity, which, however, was not so clearly expressed as in the expts. with BzCl (Norris and Ashdown, *C. A.* 19, 1244). The reactivity with the increasing chain length continuously declines, but the difference between the even members of the series and the preceding odd ones is greater than the succeeding odd members (thus, PrOH 120, BuOH 60 and AmOH 45). The H reactivity of tertiary alcs. is insignificant, and is considerably greater in Me_3COH than in $Me_2C(OH)Et$. In aromatic alcs. with the OH group in the side chain, the activity is considerably smaller than in satd. alcs. with a similar chain, notwithstanding the dilu. of the latter with C_6H_6. The H reactivity of aromatic alcs. decreases with the increased chain length. A double bond increases the H activity of fatty alcs. with an open chain. Cyclization has no influence on the activity (hexyl alc.-cyclohexanol-secondary isoheptyl alc.). Phenols in their reactivity approximate the primary satd. alcs. with the equal no. of C atoms (hexyl alc. and PhOH, heptyl alc. and cresols). The reactivity of cresols is *m* greater than *p* greater than *o*, and *m*-cresol (e. m. f. 8.70) is close to $C_6H_{11}CH_2OH$ (8.25) and $PhCH_2OH$ (8.30), though phenols have acid character, while the satd. and aromatic alcs. have not. Thus, no definite relation between the measured reactivity and the consts. of electrolytic dissocn. of alcs. could be detected by working in C_6H_6 solns. No definite relation between the

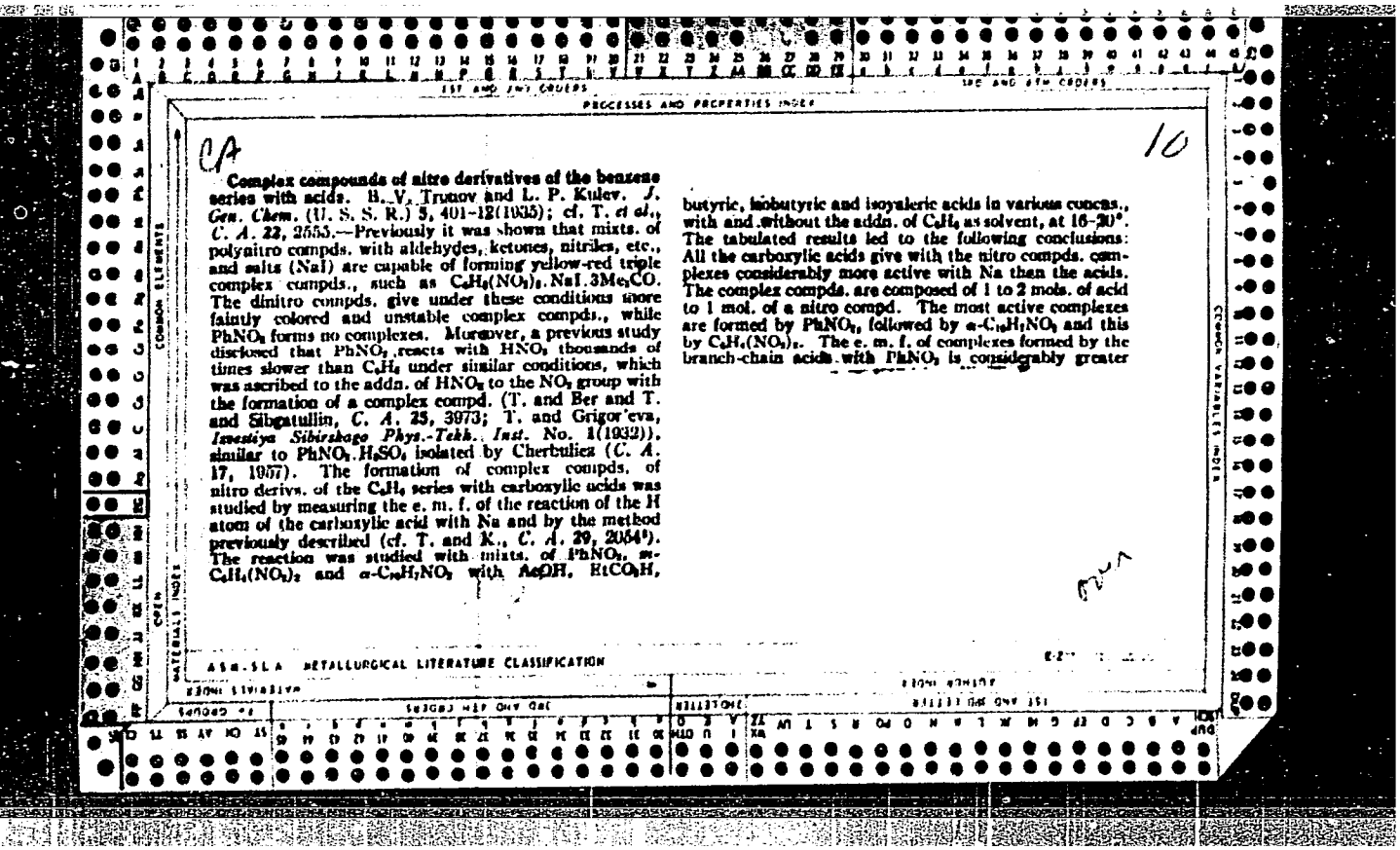
reactivity of aldehydes and ketones and the corresponding alcs. could be discovered. Thus, EtCHO is 200 times less active than PrOH, BuOH 2 times less active than $PhCH_2OH$, cyclohexanone 8 times more active than cyclohexanol, Me_2CO and iso-PrOH are almost equal, and $MeCOPr$ and Et_2CO are 3 times more active than BuOH. Me_2CO is 40 times more active than the isomeric EtCHO. With the increased mol. the activity of ketones decreases more slowly than that of alcs. Only the aromatic and heterocyclic amines show activity, whereby this is not always conditioned by the mobility of H at N. The nitro compds. show a somewhat greater activity than the corresponding amines. Nitriles show comparatively a considerable activity. Thus, MeCN is more active than Me_2CO, and $PhCH_2CN$ much more than $PhCH_2OH$. Since nitriles are polymerized with Na, it is possible that the e. m. f. is caused not by the substitution of Na for H, but by the addn. of Na to N. Of the compd. esters $AcCH_2CO_2Et$ is the most active, because of its greater ability to give the enol form, and is more active than lactic ester with a OH group.

Chas. Blanc



PROCESSES AND PROPERTIES INDEX

Comparison of the activities of alcohols and carboxylic acids under different conditions. B. V. Tronov and L. P. Kulev. *J. Gen. Chem.* (U. S. S. R.) 4, 783-9 (1934).—The comparative reactivities of MeOH, BuOH and PhOH and of formic, acetic, propionic, butyric and valeric acids were measured by the changes in the e. m. fs. of their reactions with Na, and the results plotted and tabulated. The effects of varying the solvent were also studied. Conclusions: The acids show a max. e. m. f. in the mixts. of 2 mols. of acid with 1 mol. of C_5H_5N. This max. is considerably greater than that of the reaction of free acids with Na. The magnitude of the max. e. m. f. in C_5H_5N is changed with the increasing mol. wt. of the acids and in the same direction as that of the free acids alone or in C_6H_6. The e. m. fs. of MeOH and PhOH on the acids of C_5H_5N are decreased. PhOH, having an acid reaction, behaves with C_5H_5N as an acid, attaining the max. e. m. f. at 10% concn. In general, the acidity of a OH compd. is detd. not only by its nature, but in a great measure also by the nature of the solvent. Thus comparison of H_2O, PrOH (as a representative of satd. alcs.), $PrCO_2H$ and PhOH shows that under different conditions different series are obtained according to the magnitude of e. m. f. The decreasing order in aq. medium is: $PrCO_2H$, PhOH, H_2O, BuOH; for the pure compds.: H_2O, BuOH, $PrCO_2H$ (PhOH is excluded because it is a solid at the temp. of the expts.); in C_6H_6: BuOH, $PrCO_2H$, PhOH (H_2O is excluded because of its poor soly.); weak soln. in C_5H_5N: PhOH, H_2O, $PrCO_2H$, BuOH. Hence, in speaking of the greater or less acidity of a compd., the given conditions of the relative acidity must be specified. Chas. Blanc



PROCESSES AND PROPERTIES INDEX

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Complex compounds of nitro derivatives of the benzene series with acids. B. V. Trunov and L. P. Kulev. *J. Gen. Chem.* (U. S. S. R.) 5, 401–12(1935); cf. T. *et al.*, *C. A.* **22**, 2555.—Previously it was shown that mixts. of polynitro compds. with aldehydes, ketones, nitriles, etc., and salts (NaI) are capable of forming yellow-red triple complex compds., such as $C_6H_4(NO_2)_2.NaI.3Me_2CO$. The dinitro compds. give under these conditions more faintly colored and unstable complex compds., while $PhNO_2$ forms no complexes. Moreover, a previous study disclosed that $PhNO_2$ reacts with HNO_3 thousands of times slower than C_6H_6 under similar conditions, which was ascribed to the addn. of HNO_3 to the NO_2 group with the formation of a complex compd. (T. and Ber and T. and Sibgatullin, *C. A.* **25**, 3973; T. and Grigor'eva, *Izvestiya Sibirskago Phys.-Tekh. Inst.* No. 1(1932)), similar to $PhNO_2.H_2SO_4$ isolated by Cherbuliez (*C. A.* **17**, 1977). The formation of complex compds. of nitro derivs. of the C_6H_6 series with carboxylic acids was studied by measuring the e. m. f. of the reaction of the H atom of the carboxylic acid with Na and by the method previously described (cf. T. and K., *C. A.* **29**, 2054[6]). The reaction was studied with mixts. of $PhNO_2$, *m*-$C_6H_4(NO_2)_2$ and α-$C_{10}H_7NO_2$ with $AcOH$, $EtCO_2H$, butyric, isobutyric and isovaleric acids in various concns., with and without the addn. of C_6H_6 as solvent, at 16–20°. The tabulated results led to the following conclusions: All the carboxylic acids give with the nitro compds. complexes considerably more active with Na than the acids. The complex compds. are composed of 1 to 2 mols. of acid to 1 mol. of a nitro compd. The most active complexes are formed by $PhNO_2$, followed by α-$C_{10}H_7NO_2$ and this by $C_6H_4(NO_2)_2$. The e. m. f. of complexes formed by the branch-chain acids with $PhNO_2$ is considerably greater

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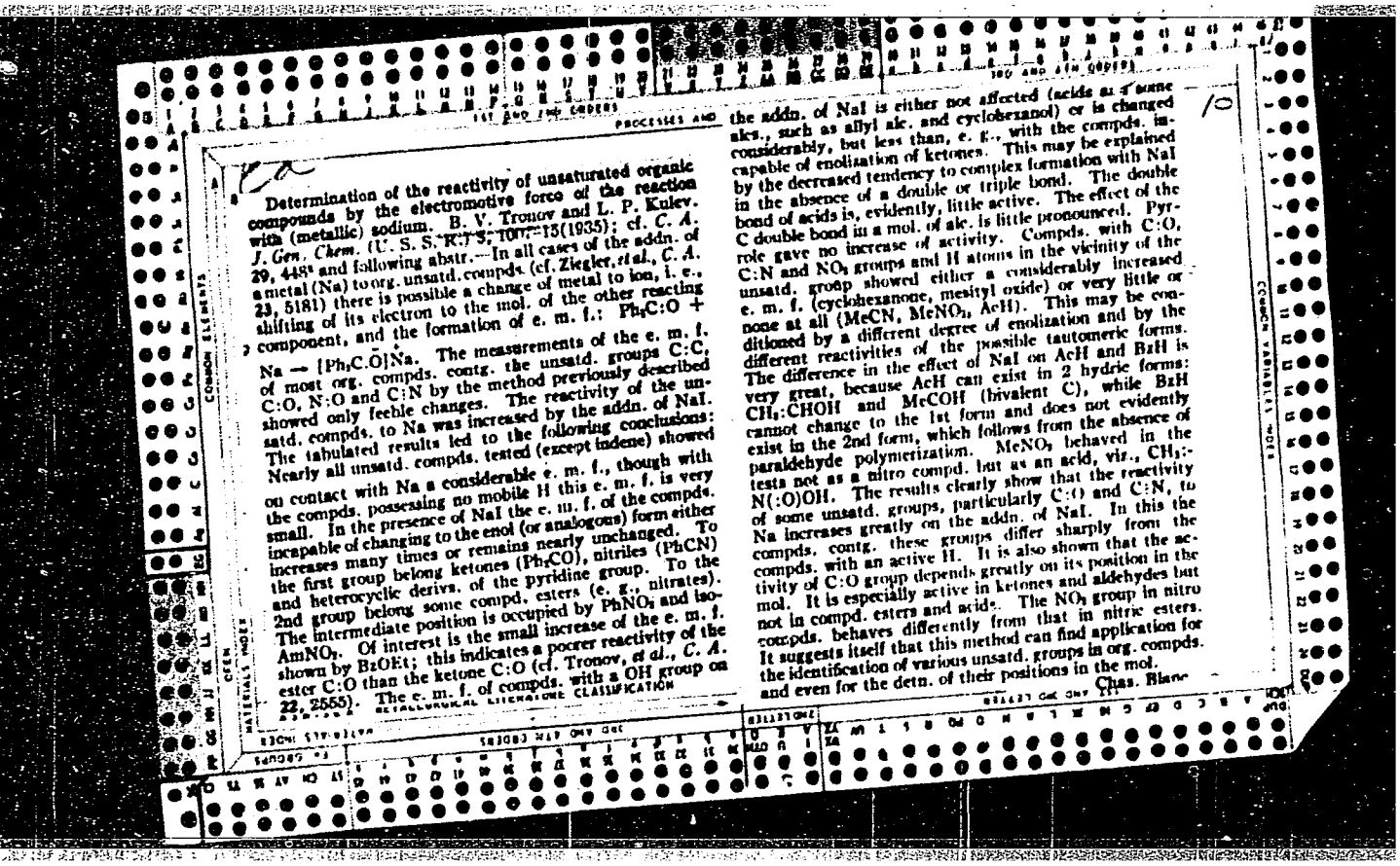
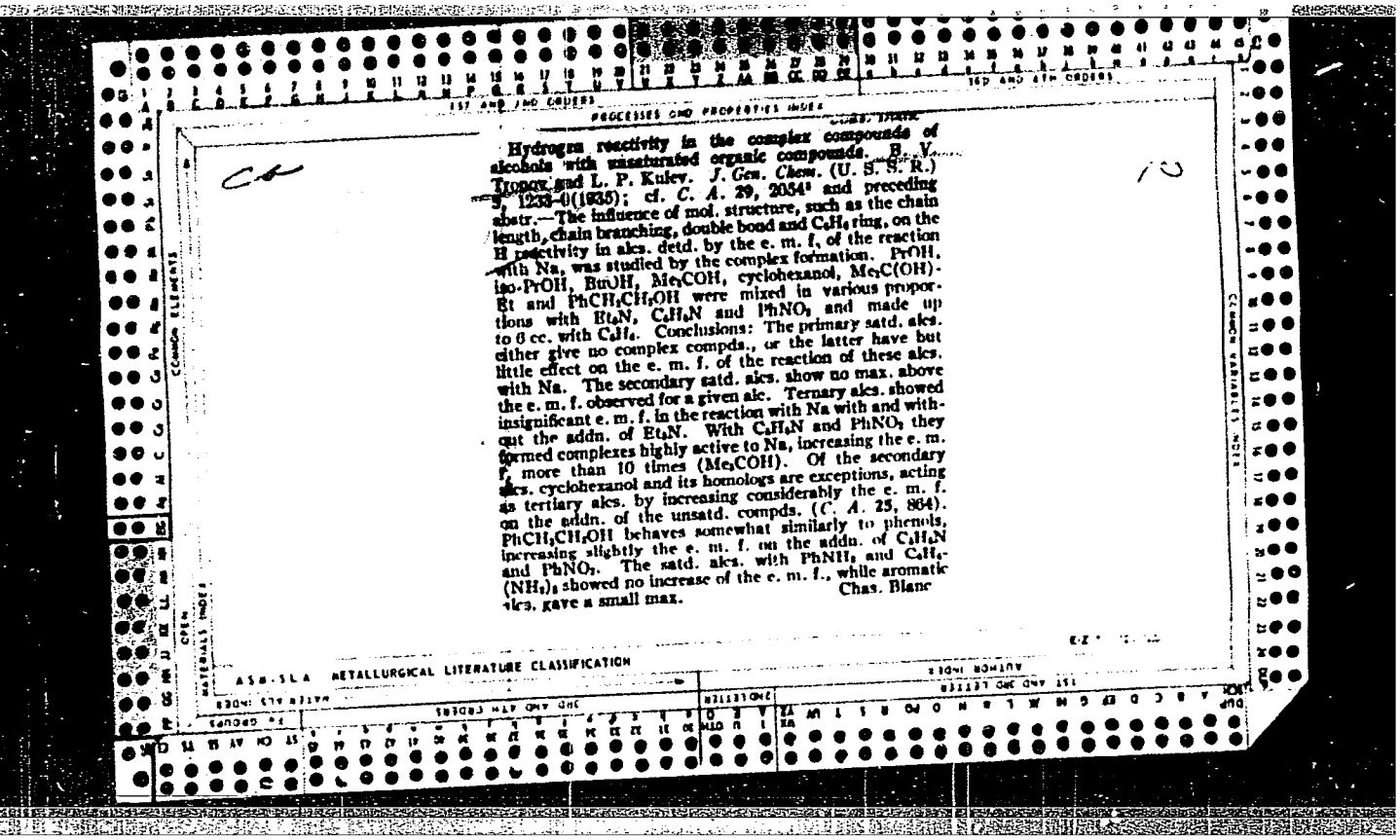
than that formed by the straight-chain acids. The dilu. of the mixts. with C_6H_6 results in a greater rate of decrease of the e. m. f. than the decreasing concn. of the mixt. The addn. of H_2O (1-3%) increases the e. m. f. by several tenfolds with AcOH and is without effect with isovaleric acid. The complex of $PhNO_3$ with isovaleric acid shows the greatest e. m. f. and the most definite compn. of $PhNO_3 + Me_2CHCH_2CO_2H$. The complexes with low e. m. f. approximate in compn. the ratio 1:2. With the addn. of H_2O to the complex formed with AcOH, the e. m. f. becomes very near to that of the complex formed with isovaleric acid. These facts indicate that the complexes with a low e. m. f. contain dimeric mols. of acids, which combine with the NO_3 group without cleaving, *e. g.*, $PhNO_3 + (AcOH)_2$. Such dimers are evidently more easily formed by acids with normal structure, because the branching chain may act as a spatial hindrance. H_2O, acting probably as a catalyst, splits the dimer into the sep. mols., which may combine with the 2 O of the NO_3 group. This in case of isobutyric and isovaleric acids can be again obstructed by the spatial hindrance.

Chas. Blanc



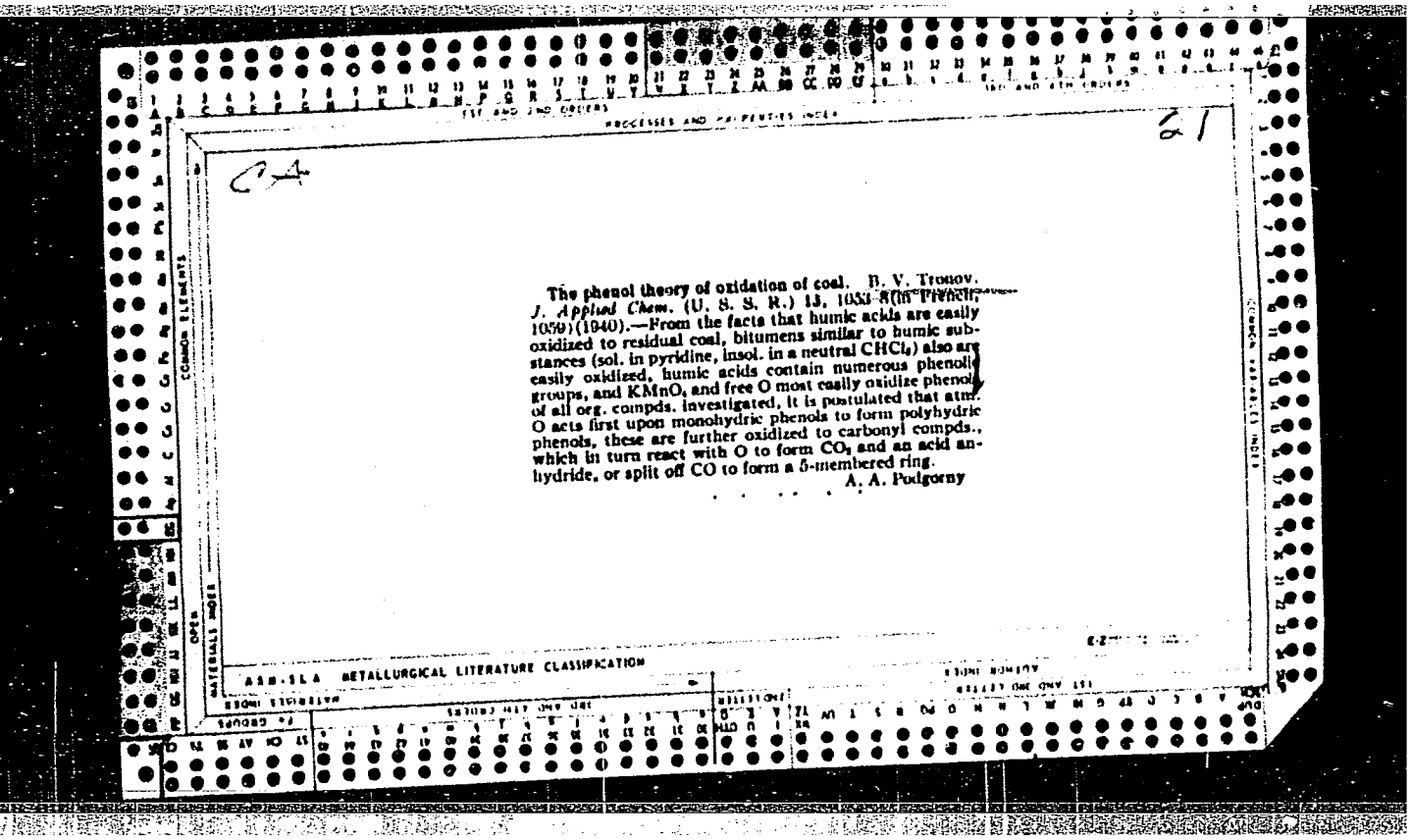
Determination of the reactivity of unsaturated organic compounds by the electromotive force of the reaction with (metallic) sodium. B. V. Tronov and L. P. Kulev. *J. Gen. Chem.* (U. S. S. R.) 5, 1077–15(1935); cf. *C. A.* 29, 448⁸ and following abstr.—In all cases of the addn. of a metal (Na) to org. unsatd. compds. (cf. Ziegler, *et al.*, *C. A.* 23, 5181) there is possible a change of metal to ion, i. e., shifting of its electron to the mol. of the other reacting component, and the formation of e. m. f.: $Ph_2C{:}O + Na \rightarrow [Ph_2C.\dot{O}]\overset{+}{N}a$. The measurements of the e. m. f. of most org. compds. contg. the unsatd. groups C:C, C:O, N:O and C:N by the method previously described showed only feeble changes. The reactivity of the unsatd. compds. to Na was increased by the addn. of NaI. The tabulated results led to the following conclusions: Nearly all unsatd. compds. tested (except indene) showed on contact with Na a considerable e. m. f., though with the compds. possessing no mobile H this e. m. f. is very small. In the presence of NaI the e. m. f. of the compds. incapable of changing to the enol (or analogous) form either increases many times or remains nearly unchanged. To the first group belong ketones (Ph_2CO), nitriles (PhCN) and heterocyclic derivs. of the pyridine group. To the 2nd group belong some compd. esters (e. g., nitrates). The intermediate position is occupied by $PhNO_2$ and $iso\text{-}AmNO_3$. Of interest is the small increase of the e. m. f. shown by BzOEt; this indicates a poorer reactivity of the ester C:O than the ketone C:O (cf. Tronov, *et al.*, *C. A.* 22, 2555). The e. m. f. of compds. with a OH group on the addn. of NaI is either not affected (acids as a rule aks., such as allyl alc. and cyclohexanol) or is changed considerably, but less than, e. g., with the compds. incapable of enolization of ketones. This may be explained by the decreased tendency to complex formation with NaI in the absence of a double or triple bond. The double bond of acids is, evidently, little active. The effect of the C double bond in a mol. of alc. is little pronounced. Pyrrole gave no increase of activity. Compds. with C:O, C:N and NO_2 groups and H atoms in the vicinity of the unsatd. group showed either a considerably increased e. m. f. (cyclohexanone, mesityl oxide) or very little or none at all (MeCN, $MeNO_2$, AcH). This may be conditioned by a different degree of enolization and by the different reactivities of the possible tautomeric forms. The difference in the effect of NaI on AcH and BzH is very great, because AcH can exist in 2 hydric forms: $CH_2{:}CHOH$ and MeCOH (bivalent C), while BzH cannot change to the 1st form and does not evidently exist in the 2nd form, which follows from the absence of paraldehyde polymerization. $MeNO_2$ behaved in the tests not as a nitro compd. but as an acid, viz., $CH_2{:}N(:O)OH$. The results clearly show that the reactivity of some unsatd. groups, particularly C:O and C:N, to Na increases greatly on the addn. of NaI. In this the compds. contg. these groups differ sharply from the compds. with an active H. It is also shown that the activity of C:O group depends greatly on its position in the mol. It is especially active in ketones and aldehydes but not in compd. esters and acids. The NO_2 group in nitro compds. behaves differently from that in nitric esters. It suggests itself that this method can find application for the identification of various unsatd. groups in org. compds. and even for the detn. of their positions in the mol.

Chas. Blanc



Hydrogen reactivity in the complex compounds of alcohols with unsaturated organic compounds. B. V. Tronov and L. P. Kulev. *J. Gen. Chem.* (U. S. S. R.) 5, 1233–40(1935); cf. *C. A.* 29, 2054[1] and preceding abstr.—The influence of mol. structure, such as the chain length, chain branching, double bond and C_6H_5 ring, on the H reactivity in alcs. detd. by the e. m. f. of the reaction with Na, was studied by the complex formation. PrOH, iso-PrOH, BuOH, Me_2COH, cyclohexanol, $Me_2C(OH)$-Et and $PhCH_2CH_2OH$ were mixed in various proportions with Et_3N, C_5H_5N and $PhNO_2$ and made up to 6 cc. with C_6H_6. Conclusions: The primary satd. alcs. either give no complex compds., or the latter have but little effect on the e. m. f. of the reaction of these alcs. with Na. The secondary satd. alcs. show no max. above the e. m. f. observed for a given alc. Ternary alcs. showed insignificant e. m. f. in the reaction with Na with and without the addn. of Et_3N. With C_5H_5N and $PhNO_2$ they formed complexes highly active to Na, increasing the e. m. f. more than 10 times (Me_2COH). Of the secondary alcs. cyclohexanol and its homologs are exceptions, acting as tertiary alcs. by increasing considerably the e. m. f. on the addn. of the unsatd. compds. (*C. A.* 25, 864). $PhCH_2CH_2OH$ behaves somewhat similarly to phenols, increasing slightly the e. m. f. on the addn. of C_5H_5N and $PhNO_2$. The satd. alcs. with $PhNH_2$ and $C_6H_4(NH_2)_2$ showed no increase of the e. m. f., while aromatic alcs. gave a small max.

Chas. Blanc



The phenol theory of oxidation of coal. B. V. Tronov. *J. Applied Chem.* (U. S. S. R.) 13, 1053-8(in French; 1059)(1940).—From the facts that humic acids are easily oxidized to residual coal, bitumens similar to humic substances (sol. in pyridine, insol. in a neutral $CHCl_3$) also are easily oxidized, humic acids contain numerous phenolic groups, and $KMnO_4$ and free O most easily oxidize phenols of all org. compds. investigated, it is postulated that atm. O acts first upon monohydric phenols to form polyhydric phenols, these are further oxidized to carbonyl compds., which in turn react with O to form CO_2 and an acid anhydride, or split off CO to form a 5-membered ring.

A. A. Podgorny

The mechanism of oxidation of coal. B. V. Tronov, G. V. Kharitonov, and N. I. Nazarova. *Trudy Khim. Inst. Kirgiz. Filial Akad. Nauk* [illegible] No. 4, 39-[illegible]

[illegible] gave a powdery button [illegible] gave [illegible] IV [illegible] homogeneous matrix 7.5-[illegible]% and residual matter [illegible] 3.5%, gave a hollow sintered button. V, a hard [illegible] coking coal, gave a tight [illegible] sintered button. VI [illegible]

[illegible] and volatile matter [illegible] III 1.52, [illegible] IV [illegible] V 1.15, 7.19, 0.41, 26.62; VI 1.18, 5.54, 0.31, 18.57; VII 1.80, 6.29, 1.08, [illegible] VIII [illegible] IX [illegible] Samples I-III [illegible] subject to small [illegible] oxidation [illegible] with air oxygen for 728 hrs. at [illegible] at [illegible] for 1400 [illegible] hrs. The gain in mass was detd. at intervals, and analyses were made for carb[illegible] plus phenolic groups (titration with N [illegible] soln.), for carboxyl groups (detn. of [illegible]

[illegible] III [illegible] IX [illegible]

[illegible] 1.7 at 728 hrs. IV, V, and VI [illegible] VII, VIII, [illegible]

[illegible] phenolic [illegible]

rate of formation of carbonyl groups in IV, V, and VI is attributed to the lack of carboxyl groups. A study of 18 monohydric phenols showed that the presence of carboxyl groups slowed their oxidation by $KMnO_4$. The iodine no. of I, II, IV, V, and VI increased slightly for the first 24–150 hrs., then gradually decreased. III and VII were almost const. for a comparable time, then slowly decreased. VIII and IX showed an initial and over-all decline, but with a small max. after 72–148 hrs., and a slight rise toward the end. The initial increase is attributed to the increased content of phenolic hydroxyl groups. The amount of dichromate reduced by I, II, and III gradually declined over the 724-hr. period; IV to VIII increased 3.5- to 10-fold in 1300 hrs. The permanganate reduced by IV to VIII also increased. Gains in wt. of I and II go through a max. at about 300 hrs.; all the rest gain in wt. for the entire oxidation period. The fraction of combining oxygen is indicated which goes into the formation of phenolic, carboxyl, and carbonyl groups at various times during the air oxidation. IV, V, and VI were tested for peroxides after 1300 hrs. by use of KI, $TiCl_4$, and $Na_2S_2O_4$ solns. The apparent peroxide was considerably less than the functional groups, and much of the reaction was attributed to quinoid groups. In V and VII the contents of phenolic and carbonyl groups, $KMnO_4$ reduced and total S increased as the density increased in the fresh samples, and with some exceptions after oxidation. During the course of oxidation of IV, V, and VI the heating value dropped steadily, while the content of volatile matter rose steadily. In VII the heating value also decreased steadily, but the content of volatile matter fluctuated.

R. T. Myers

TRONOV, B.V.; KOLESNIKOVA, S.F.

The effect of complex formation on the rate of iodination of phenol and aniline. Soob.o nauch.rab.chl.VKHO no.1:46-49 '53. (MIRA 10:10)
(Iodination) (Phenols) (Aniline)

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TRONOV, B.V.; NOVIKOV, A.N.

Iodination of benzoic acid and benzaldehyde in the presence of a nitrogen-sulfur nitrating mixture. Soob.o nauch.rab.chl.VKHO no.3:9-11 '53. (MIRA 10:10)
(Iodination) (Benzoic acid) (Benzaldehyde)

TRONOV, B.V.; SAMARIN, A.S.

Reaction of iodine salts with esters of halogen substituted carboxylic acids. Soob.o nauch.rab.chl.VKHO no.4:48-49 '53. (MIRA 10:10)
(Iodine compounds) (Acids)

TRONOV, B. V.

Reaction of benzene with esters in the presence of various catalysts. B. V. Tronov and A. M. Petrova (S. M. Kirov Polytech. Inst., Tomsk). *Zhur. Obshchei Khim.* 23, 1019-22(1953); cf. *C.A.* 25, 3973.—The reaction of 2 moles C_6H_6 with various esters in the presence of catalysts can be summarized as follows (the mixts. were heated 6 hrs. on a water bath; a few vigorous reactions required initial cooling): 0.5 mole $EtONO_2$ and 0.25 mole $AlCl_3$ gave 81% $PhNO_2$, also formed in low yield with 0.25 mole $ZnCl_2$; 0.5 mole $EtONO_2$ and 0.25 mole $SnCl_4$ gave 29.6% $PhNO_2$, while 0.25 mole $SbCl_4$ gave 49.2% $PhNO_2$; 0.226 mole $EtONO_2$ and 0.144 mole $SbCl_5$ gave 83.6% $PhNO_2$; 0.5 mole Et_2SO_4 and 0.25 mole $AlCl_3$ gave 17% EtPh and 10.9% $Et_2C_6H_4$; no reaction took place with Et_2SO_4 and $FeCl_3$, $ZnCl_2$, $SnCl_4$, $SbCl_5$, or $BiCl_3$ catalysts; 0.25 mole Et_3PO_4 and 0.25 mole $AlCl_3$ gave 23% EtPh; 0.5 mole $(BuO)_3B$ and 0.125 mole $AlCl_3$ gave some organo-B compd.; $Si(OMe)_4$ and $SnCl_4$ did not react, but 0.125 mole $Si(OEt)_4$ and 0.125 mole $AlCl_3$ gave 12% EtPh; 0.125 mole EtOAc did not react with $AlCl_3$ or $SbCl_5$; $ZnCl_2$ was unreactive with AcOBu and $AlCl_3$ was unreactive with AcOAm; 0.125 mole $AcOCH_2Ph$ and 0.125 mole $AlCl_3$ gave 70.7% Ph_2CH_2, while 79% was obtained in a repetition of the expt.; with this ester $CuCl_2$, $ZnCl_2$, $ZnBr_2$ were unreactive, however, an equimolar amt. of $SnCl_4$ gave 66.6% Ph_2CH_2 while $SbCl_4$ gave 36%; $BiCl_3$ gave 14%; no reaction took place with $AcOCH_2Ph$ and AlI_3, or with AcOPh and $AlCl_3$ or $SbCl_5$; 1/15 mole triacetin and 0.2 mole $AlCl_3$ gave 28% AcPh, while 29% was obtained with 0.2 mole $SbCl_5$; 0.125 mole $ClCH_2CO_2Et$ and 0.125 mole $AlCl_3$ gave 54.2% EtPh; 0.5 mole $ClCH_2CO_2Me$ and 0.125 mole $AlCl_3$ did not react; 1/15 mole each of Me_2CBrCO_2Et and $AlCl_3$ gave 19.2% EtPh, while 8% yield was obtained from 0.25 mole $NCCH_2CO_2Et$ and 0.125 mole $AlCl_3$; no reaction took place with $CO(OMe)_2$ and $AlCl_3$, but 0.125 mole $(CO_2Et)_2$ and 0.125 m. $AlCl_3$ gave 15.4% EtPh, and 12.5% EtPh was formed from 0.125 mole $CH_2(CO_2Et)_2$ and 0.125 mole $AlCl_3$; 0.125 mole $PhSO_2Me$ and 0.25 mole $AlCl_3$ gave 32% MePh; no reaction took place with Et_2O and $AlCl_3$ or $SbCl_5$; 0.125 mole $(PhCH_2)_2O$ gave 91.5% Ph_2CH_2 with 0.125 mole $AlCl_3$, while 79.9% was obtained with $SnCl_4$ and 40.5% with $SbCl_5$. Generally, esters which are expected to form complexes at the ester O gave alkylbenzenes. Esters of boric acid can react in 2 ways, since the complex with the catalyst can donate an alkyl or add the B atom to the Ph ring. If $EtONO_2$ is added to C_6H_6, addn. of $SbCl_5$ leads only to nitration.

G. M. Kosolapoff

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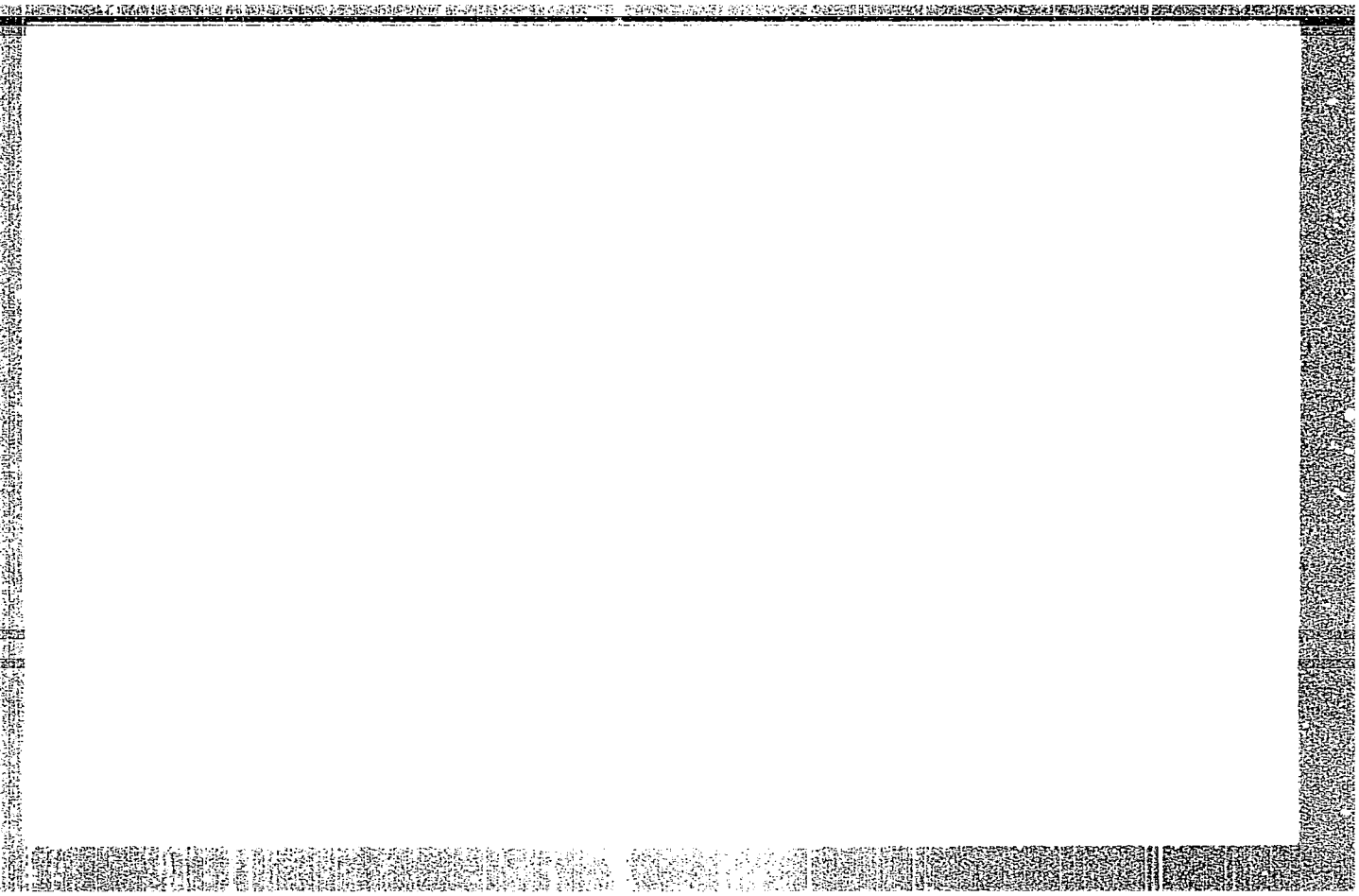

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TRONOV, B. V.

USSR/Chemistry - Catalytic bromination

Card 1/1 : Pub. 151 - 26/42

Authors : Tronov, B. V., and Pershina, L. A.

Title : Effect of various catalysts on the tendency and rate of bromination of aromatic compounds

Periodical : Zhur. ob. khim. 24/9, 1608-1617, Sep 1954

Abstract : The catalysts found to be the most suitable for the bromination of aromatic compounds are listed. Zn, in the form of zinc powder, is considered the best practical catalyst for bromination of benzene. The hydrogen bromide, forming during bromination, accelerates the displacement reaction. Substances which inhibit or do not accelerate the displacement are described. These substances, particularly H_2O, also have a definite effect on the tendency of the reaction. It was also established that the bromination catalysis can be either homo - or heterogeneous. Four references: 3-USSR and 1-German (1932-1950). Tables.

Institution : The Polytechicum, Tomsk

Submitted : January 18, 1954

Tronov, B. V.

USSR/Chemistry - Organic chemistry

Card 1/1 Pub. 151 - 9/37

Authors : Tronov, B. V., and Bortovoy, I. M.

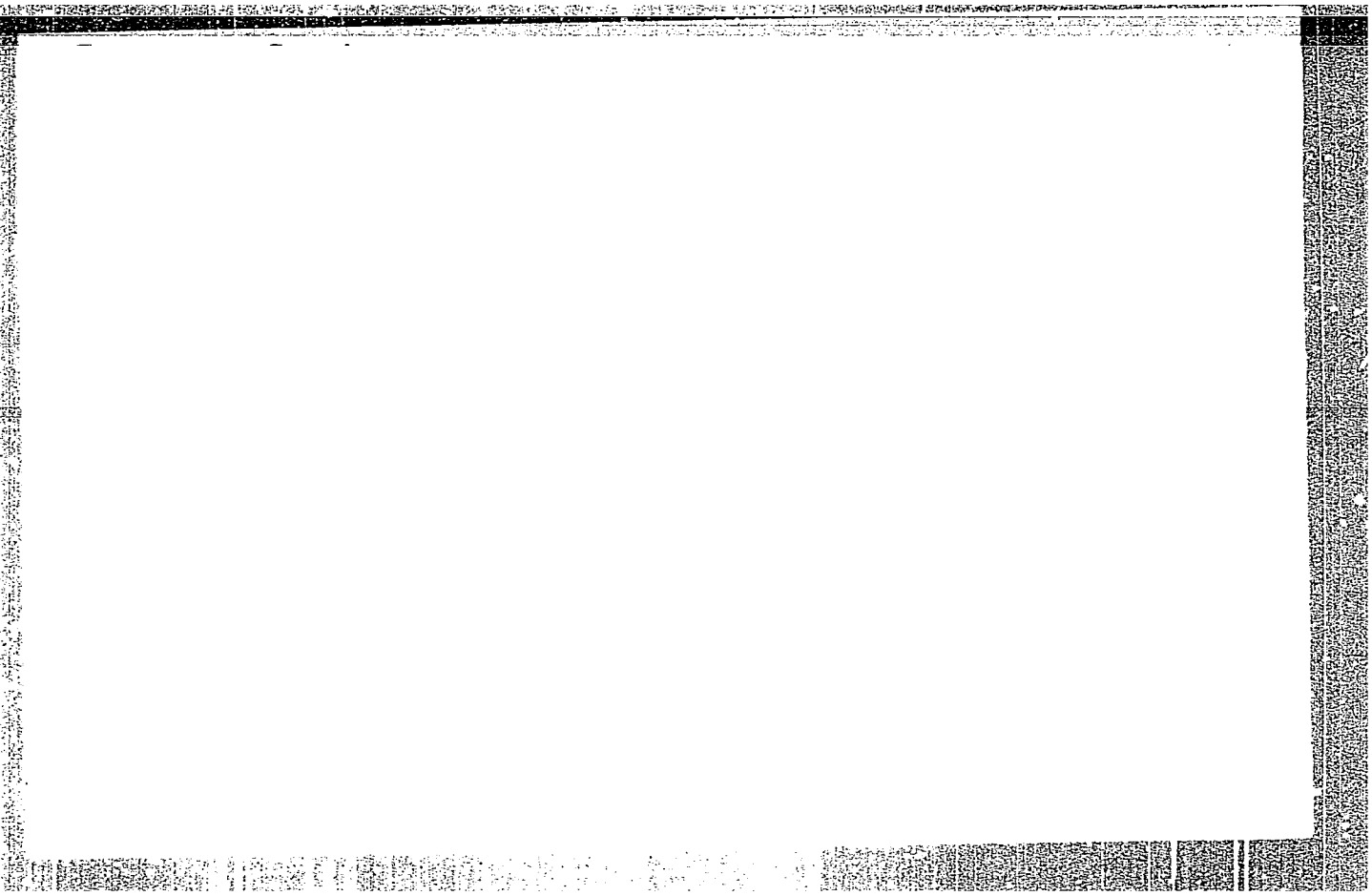
Title : Comparison of methods for the study of complex forming systems in organic chemistry

Periodical : Zhur. ob. khim. 24/10, 1750-1759, Oct 1954

Abstract : Several methods of studying complex-forming systems (direct separation of complexes, chemical and physico-chemical analysis of the latter), were compared. Eight new complex compounds separated and analyzed are described. The results obtained by means of the heterogeneous reaction method are listed. Other physico-chemical methods such as the thermal analysis method and the Tronov-Kuleva electrochemical method, which is based on the determination of the investigated substance with the metal serves as a source of energy, were tested and found highly sensitive. Nineteen references: 10-USSR; 6-USA and 3-German (1882-1953). Table; graphs.

Institution : State University, Tomsk

Submitted : March 31, 1954



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